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PROBLEMS OF SOCIAL STATISTICS AND SOCIAL RESEARCH.*

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Problems of social research require for their practical solution an adequate and conclusive basis of data free from even the suspicion of bias in their collection or serious error in their analysis. The ever-increasing complexity of social relations demands a clear presentation of social facts and forces, which, unfortunately, is only too often wanting as an underlying basis for plans and purposes of social reform. The collection of social statistics is almost invariably a most difficult and complex task, involving what may often amount to impertinence in a scientific inquiry into the actual facts of domestic life and the more or less successful individual adaptation to conditions as they are. This, for illustration, is best made evident in the numerous efforts to collect data as to household expenditures among wage-earners and others, but with patience and skill some, at least, of these investigations have produced conclusive and very valuable results. The value of investigation into social conditions is increased in proportion as the field is limited and as the investigator brings personal qualifications of an exceptional character to bear upon the collection of the data required. Those who are most familiar with the life and labor of the wage-earner, the poor and the pauper class, are, by their knowledge and experience, the best qualified to secure the original data upon many of the most important questions

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which demand solution. Unfortunately, it is difficult to secure qualified investigators, whose judgment has not become impaired by repeated impressions of social misery resulting from circumstances or conditions which may have no connection whatever with the problems under consideration. The object in view being strictly a scientific one, every effort should be made to eliminate sentimental bias or prejudice strongly inclined towards unwarranted conclusions or an unwarranted interpretation of the facts collected. Nowhere is the risk of amateur work greater than in the field of social statistics and social research, and, *per contra*, nowhere is the necessity of exceptional ability and discriminating judgment greater than in this. In economic statistics, such as prices and wages, cost of production and hours of labor, errors of judgment are less likely to occur, in that the degree of variety in the units to be considered is much less. Such data also are much less elusive in character, and not so complex in their relation to other and still more involved problems.

In its finality social research, as the term is generally understood, may be said to have for its object the solution of the problem of poverty, with all its resulting problems. Such social investigations, therefore, are largely concerned with an inquiry into the actual circumstances of life on the part of the poor and the relation of their condition to the wealth and circumstances of the materially more fortunate, or the well-to-do and the rich. The question which is being asked with ever-increasing frequency is whether, under modern conditions, it is necessary that there should be as large a proportion of the poor and pauper class as are actually met with in civilized countries. Social inquiries are being directed to ascertain whether poverty, pauperism, ignorance, and crime are not more the result of an accidental miscarriage of human effort than of inherent limitations of human society as it is organized. Those who have felt most strongly upon the subject of social misery have elaborated in detail plans of radical social reform, but the many ideal communities which have been established have all been more or less complete failures. There are those who deny that

social progress is actually being made and who, in the words of Henry George, believe that "the poor are growing poorer, and the rich are growing richer." Theories are being spread broadcast over the earth as to the ever-increasing duties of the rich, the well-to-do, and even the prosperous towards those who are living under less fortunate material circumstances and conditions. In the abstract it is a question of social justice of one group of human beings towards the other, and it must be admitted that within the last generation, at least, a sense of social responsibility has been developed which was unknown in earlier and even comparatively recent times. The evidence is overwhelming that much of what goes under the term of social legislation has been productive of decidedly beneficial results, having improved the conditions of life generally and eliminated, among others, the needless evil of child labor and of degrading work on the part of women formerly employed in many industries unsuitable to the sex and certain to produce physical and moral deterioration. Much good has also been accomplished by social legislation relating to factory inspection, hours of labor, employers' liability, etc., all of which warrants the conclusion that even greater results may be attained by still more effective legislation or associated effort for the benefit of the mass of mankind not in a position to help itself.

As an aid toward the solution of these problems, social statistics are indispensable, and it may be said without fear of contradiction that much of the miscarriage of effort in social legislation has been the result of misleading statistics and even more of misleading analysis, little short of amateur guesswork. By slow degrees the inadequacy of the present basis of fact along certain lines of social legislation has been recognized, and efforts are being made in every direction to make such investigations more qualified, trustworthy, and practically useful. The time has passed when a plain statement of absolute fact relating to social conditions possible of amelioration or change could go unchallenged or leave a problem unsolved, merely as a matter of complacency, indifference, or criminal neglect. The present age demands the truth, and, when the truth has

been secured, it is willing to take action and institute reforms at whatever cost, provided the result is for the distinct and unquestionable benefit of the mass of mankind.

There is an essential difference which marks and limits the field of social statistics, and that is that the most important data have to be secured by private enterprise for a large variety of purposes, while economic statistics are properly a matter of government concern. There is a natural and proper limit upon government inquiries into the facts of every-day life and labor, as made evident by the great difficulty of the Census Office to secure data as to sickness and infirmity among different classes, while still more delicate investigations, such as, for illustration, the sanitary condition of homes, the physical condition of children, the degree of frequency of periodical savings, and the expenditures for drink, are evidence that private enterprise can do the most efficient work in this field of scientific research. But another difficulty in such investigations is that the trained investigator is rare, and it is only too often an amateur who takes up such work as a sort of plaything for an idle hour. Yet of all the delicate tasks to which the human mind may apply itself the collection of social facts and the study of collective social phenomena are the most difficult, but at the same time the most valuable.

Social research, in a limited sense, has for its chief concern a qualified inquiry into the underlying causes of poverty and economic dependence on the part of a disproportionately large number of wage-earners and others constituting the mass of mankind in all civilized countries. Since the beginning of time the weak and dependent have been compelled to rely upon the strong and more fortunate, and to the end of time, in the nature of things, this must needs be so. But in a free democracy it is a political as well as a social duty, by majority rule, to bring about, through an intelligent co-operation in State and associated effort, a condition of things most favorable to the highest development of social units and efficiency in citizenship and social relations. Blind faith is often placed in law and legislation to bring about reforms which, in too many cases, can only

result from slow changes in human character, in economic conditions and industrial methods, and, the more clearly this is understood, the better for those whose interests are at stake. As an aid in the solution of social problems, human benevolence is called into action as a Christian charity and duty, but in its aims and purposes it stands in much the same relation to human society as the medical man does to the patient suffering from incurable ills,—it may relieve, and does relieve, much suffering and hardship, but it no more removes the cause of social ill-health than the physician removes the cause of disease by the more or less effective cure of the suffering patient. Many years ago the result of this theory of social reform through the efforts of benevolence alone was summed up in the following brief statement, which is well deserving of being repeated on this occasion:—

> On every hand he [the tender-hearted man of good means and substance sees the most glaring anomalies in society; immense wealth and gigantic poverty; the highest points of civilization and the lowest depths of barbarism; men and women living in possession of an overflowing abundance of the elegancies and comforts of existence, while in the same city those of like passions with themselves, members of the same great human family, are herding together not so much like savages as like wild beasts,—in short, a state of things rising on one side as near to heaven as on the other it sinks near to hell. His conscience gives him no rest till he has done something by way of remedy; so he subscribes to some charitable institution, writes a pamphlet, or forms a philanthropic society. He labors for a time: tries various schemes for man's regeneration; opens a school perhaps, or a soup-kitchen, or promotes emigration; and ultimately finds himself so much imposed on and deluded by the very people whom he is laboring to serve, that he gives up the profession of philanthropy, and returns to enjoy the good things of this life without feeling as previously that "the trail of the serpent is over them all."

And in continuation, speaking of this class of persons,—

> Seeing nothing but distress, their relief of it is direct and prompt, and necessarily temporary. The causes of distress are left untouched, and constantly reproduce cases of the same kind; and these benevolent gentlemen cannot be induced to adopt the slow and apparently harsher, but in

reality more merciful plan, of patiently investigating causes and removing them if they are removable.*

In this same sense I would define the objects of social research; that is, to ascertain with absolute impartiality the causes conducive to social ill-health, chiefly poverty and economic dependence, and, after having ascertained the true and real causes, to suggest a rational and practical method of social reform, in conformity to the same exact scientific principles which govern in investigations in applied chemistry or economic geology. Poverty and want are such closely related terms that every age attaches to them new and different meanings, but it may safely be asserted that needless poverty at any time is that which inflicts upon the many such burdens as substantially hinder them in the struggle for the maintenance of the highest possible rational standard of life. It is not so much a question of suffering as of a needless struggle against removable odds that concerns the social legislator and the rational philanthropist, who by their aid and co-operation would materially assist in the social amelioration of the present age.

It is difficult in a brief outline to present a working plan of social research, applicable alike to the many and widely different problems which require consideration. Every such investigation should of necessity be preceded by a preliminary research into the available literature of the subject, from which such extracts should be made as afford an intelligent historical retrospect of what has been done or accomplished in the same direction in the past. Such preliminary research would bring out the fundamental essentials of the subject and emphasize the direction which an original inquiry should take and the scope of the same in the light of a past experience. The second requirement is a complete statistical abstract of all the existing statistical material relating to the subject under consideration, critically reviewed and subjected to a qualified analysis to determine the statistical scope of the proposed inquiry and to emphasize the elements of most determining and practical impor-

* Chambers's "Papers for the People," vol. ix, art. Industrial Investments and Associations. Philadelphia, 1854.

tance. Upon such a basis of descriptive and statistical information a working plan can be formulated for the third step of *an original personal inquiry* into the actual conditions and facts of the question and problem under investigation. The personal inquiry should be made by the very best obtainable talent, thoroughly familiar with the technical elements of the problem, to secure an absolutely trustworthy basis for subsequent conclusions. The results of personal investigation should be recorded in full detail from day to day as the investigation proceeds, to eliminate as far as possible errors resulting from defects of memory or the accidental omission of minor details which by accumulation might assume considerable importance. It cannot be too much emphasized that for such an investigation the best possible talent should be secured, upon exactly the same principle as expert chemists of the highest grade are employed in commercial enterprises to carry on original research for the purpose of introducing far-reaching changes in commercial practice. The method followed in the original inquiry should be fully described, so that every fact of possible importance should be fully known and every observation of value made by the investigator should be made a matter of permanent record.

The fourth step in the investigation should be the tabulation of new statistical material obtained by personal effort and its co-ordination to data previously collected or otherwise secured. The fifth and last step should be the final analysis of all the material brought together in the form of a convenient report, thoroughly indexed, with the conclusions set forth in the form of a broad generalization, precisely emphasizing the essential points demanding consideration, with the recommendations warranted in the light of the facts secured. There is nothing new in this method, which has been followed in many social and economic investigations, except the order of the arrangement and the definite connection between the investigation, the conclusions, and the ultimate recommendations. In other words, it is of the utmost importance that the responsibility of the investigator should be absolutely fixed by the final suggestions for specific action warranted in the light of indisputable truths.

When this method is followed, it will be found that the conclusions speak so emphatically for themselves that the recommendation for specific action remains an unquestionable argument in favor of a rational and practical theory of social reform.

Having briefly outlined the utility of social statistics and a practical method of social research, I would briefly call attention to a number of the more important problems which require to be investigated and reported upon along the lines previously indicated. It will be impossible for me to enlarge beyond the mere mention of the specific subjects, except to indicate similar lines of inquiry or the urgent necessity of a better knowledge of the facts than is at present extant. All of these problems bear immediately upon the question of poverty and pauperism and to a considerable extent upon dependence in old age, resulting from social inefficiency or ill-adjustment of existing social conditions.

The Problem of Wage-earners' Expenditures.

(1) I would suggest a really conclusive inquiry into the subject of income expenditures among wage-earners and others for the essentials of life, and the relation of such expenditures to savings, investments, and accumulations for self-support in old age. Such investigations have frequently been made, but as a rule under serious limitations. It would be desirable to very materially enlarge the scope of such an inquiry, although possibly reducing the number of items of expenditures to be considered. Of recent investigations in this direction the most useful and suggestive are "The Wage-earners' Budgets" in Rountree's "Study of Poverty in York," the investigation of the Economic Club of London, the Family Monographs by Elsa G. Herzfeld, Wage-earners' Budgets by Mrs. L. B. More, published in 1907; also, the various investigations by Federal and State governments; and, finally, the rather extended investigation by the British Board of Trade, published as a memorandum of the consumption and cost of food in workmen's families, in 1904. (See Statistical Appendix No. I.)

The Problem of Periodical Savings.

(2) There is urgent need of a conclusive inquiry into the actual distribution of wealth among wage-earners in representative industrial cities, to ascertain the extent to which periodical or systematic deductions are made from the weekly income for purposes of permanent savings and investments as security against dependence in old age. The various investigations which have been made into the distribution of wealth in the United States, among others the treatise by Charles B. Spahr, preclude anything like a rational conclusion as to the exceedingly important question whether the widely diffused material prosperity of the United States is substantially increasing the economic security of the masses by personal accumulation of registered property. It is of importance to keep in mind the fundamental distinction between temporary material well-being resulting from high wages and the permanent accumulations in the form of capital invested in registered property by an increasingly larger proportion of the population. Only the latter can be considered real prosperity and of permanent utility to the nation, as well as the people at large. To the extent to which systematic deductions are made from weekly earnings for the purpose of accumulations and investments, the actual wealth of the nation will increase, or correspondingly diminish where this is not the case.* Equally intimate is the relation of dependent poverty, especially in old age, to systematic habits of savings during the active or productive period of life. An investigation along these lines would be productive of the greatest possible benefit, to set at rest the often extreme and

* This problem, of course, is as old as the industrial history of nations. As early as 1677, a Mr. Henry Peacham published a tract on "The Worth of a Penny: or, A Caution to Keep Money. With the Causes of the Scarcity and Misery of the want thereof, in these hard and Merciless Times. As also how to save it, in our Diet, Apparel, Recreations, etc., and also what honest Courses men in want may take to live."

Another early publication on this subject is "Documents Relative to Savings Banks, Temperance and Lotteries," published by order of the Society for the Prevention of Pauperism in the City of New York, 1819, probably suggested by an earlier publication by the Right Hon. George Rose on "Observations on Banks for Savings," London, 1816. The same year there was published an "Essay on Provident or Parish Banks for the Security and Improvement of the Savings of Tradesmen, Artificers, Servants, etc., until Required

sinister assurances of those who hold that the actual as well as the relative degree of economic dependence is greater to-day than in former years.

Details of Savings-bank Accumulations.

(3) Closely connected with the preceding subject suggested for social research is the need of a qualified statistical inquiry into the essential details of savings-banks accumulations, to determine how far such accumulations are really the deposits of wage-earners. It would serve a very useful purpose to ascertain the occupations or elements of the wage-earning population most inclined to make use of these institutions and the relative size of the amounts accumulated, the period of time required to produce the accumulation, the average deposits made per annum or during shorter periods, the effect of interest on the deposits, and the extent to which such interest payments are utilized to provide for self-support during periods of unemployment or in old age. There is as yet but a very fragmentary literature of the subject, and only a very limited analysis has ever been made of the entire subject of savings-banks accounts. One of the earliest investigations of this kind was made by Hon. Carroll D. Wright, as Commissioner of Labor of Massachusetts, in 1873, and no subsequent investigation has been made which would permit of definite conclusions as to the social utility of savings-banks to carry out the laudable intentions and purposes which lie at the basis of these useful institutions. (See Statistical Appendix No. 3.)

for their Future Wants or Advancement in Life, containing a Brief History of the Several Schemes for the Above Purpose and Developing the Causes which have Promoted or Prevented their Success," by Barber Beaumont. Mr. Alexander Robertson in 1854 published an "Essay on Periodical Savings Applied to Provident Purposes, with Remarks on the Constitution and Practice of Friendly Societies and Savings Banks and Suggesting a Plan of Self-Protecting Life Insurance," inscribed with the following quotation from the London *Times* of Nov. 27, 1850: "There is not a more painful chapter in the history of our social condition than that which records the usual fate of our most deserving laborers, artisans, domestic servants, clerks, and others who in the turn of life and in the decline of power attempt to get a better interest for their store than the £2 15*s*. per annum which is all that the savings bank can afford."

The Problem of Safe Investments by Wage-earners and the Poor.

(4) Equally important, if not more so, is the necessity of an inquiry into the entire subject of investments by wage-earners and others, including the poor or casual laborers, to determine whether such investments as are made by the least prosperous element of the population are, on the whole, best adapted to their needs, in combining the essentials of absolute security with a fair degree of remunerative return. This subject has attracted considerable attention abroad, and, especially in England, investigations have been made from time to time, some of which at least have been productive of very good results. There is not the slightest reason to question the prevailing opinion that enormous amounts saved, as the result of industry and frugality, by wage-earners are wasted and dissipated in worthless investments made upon pretended assurances of exceptional security and exceptionally profitable results. It would be of value to determine for a sufficiently large number of wage-earners, in representative industrial centres, the character of their investments in lands and houses, tenement property, shares in industrial or other corporations, state or municipal obligations, or any other form of registered property. It would also be of value to include in such an inquiry the subject of betting and gambling, to ascertain how far the earnings of the poor and fairly well-to-do are wasted in these directions. As a basis for any rational inquiry into the subject of State pensions, which is assuming an ever-increasing importance, it would be of much practical value to know how far among the aged of the present period there are those who were formerly wage-earners, but who found it possible by thrift, economy, and good judgment to secure for themselves a reasonable competency for the needs of their declining years. Manifestly, the lesson of such lives must needs be of the greatest possible educational value, as proving conclusively the possibility of obtaining by frugality, self-denial, and good judgment

what is by some demanded as a gratuity or modified form of poor-relief from the States. (See Statistical Appendix No. 4.)

The Problem of Preventable Industrial Diseases.

(5) One of the chief causes of poverty is preventable illness and premature mortality on the part of the bread-winner or other wage-earning members of the family. A comprehensive investigation into the relation of preventable disease to poverty in general, and in particular to dependence in old age, would serve a most useful purpose by emphasizing the cost and economic consequences of preventable sickness. The public burdens resulting from preventable diseases are very much greater than generally assumed, but even greater is the impaired physical efficiency, caused by tuberculosis, typhoid, and other preventable diseases. Newsholme, one of the foremost English authorities, has emphasized the intimate relation which exists between poverty and disease, and it is a generally accepted theory that the duration of life among the poor is much less than among the well-to-do, while even greater among them is the amount of preventable disease. Only one really conclusive investigation has been made in this country into the subject of acute and chronic diseases among the population at large, in connection with the last State Census of Massachusetts, which indicates the direction that such investigations should take among some selected elements of the population, with special reference to the relation of poverty to disease.

It is true that, in a measure, the economic consequences of illness among wage-earners are mitigated by insurance, but the effects are most serious among the poor and even the pauper element, among whom insurance protection is practically out of the question by reason of their poverty. Such an inquiry might be enlarged to include the whole problem of possible physical deterioration and its relation to poverty and physical impairment, with special reference to economic dependence in old age. Extensive investigations in this direction have been made in England by a Departmental Committee, amplified

by numerous statistical researches into the physical condition of school children.* The conclusions of these investigations are decidedly to the effect that poverty bears heavily upon the physical side of life, and is, unquestionably, an immediate cause of physical deterioration. In this country, on account of the heterogeneous population of our large cities, the problem is much more complex and requires to be investigated with much greater care. Anthropometric measurements of different elements of the population would serve a decidedly practical purpose, provided they are made to include the adult population employed in industries liable to physical over-strain and other resulting industrial diseases. Most of the existing data upon the relation of factory labor to the health of the operatives are antiquated, and no longer of practical value as a guide in modern factory legislation.† (See Statistical Appendix No. 5.)

The Problem of Preventable Industrial Accidents.

(6) A corresponding inquiry into the subject of industrial accidents, the cause of their frequency and most practical method of prevention, but in particular such accidents as occur in disproportionate numbers among men employed in mining, on railroads, in shipping, building operations, etc., would serve an equally important purpose, more so in view of the increasing agitation for radical legislation upon the subject of employers' liability. Remarkable as the statement may sound, there has never been made a qualified inquiry into the subject of industrial accidents and their economic importance as contributory causes to dependence in old age, nor has much progress been made in the direction of reducing the frequency of industrial accidents to a minimum. In fact, the risk in certain occu-

* Report on Physical Deterioration, 3 vols. London, 1904. Parliamentary Papers, Cd. 2175, 2186, and 2210. See also Report of Investigation into Social Conditions in Dundee, Scotland, published by the Dundee Social Union, 1905.

† The recent Report of the British Departmental Committee on Industrial Diseases may be consulted to advantage. The same has been published as Parliamentary Papers, Cd. 3495–96. London, 1907.

pations is greater to-day than in former years, and the subject lends itself peculiarly to social research, in that many of the associated phenomena are outside of the scope of a strictly limited statistical investigation. In connection with such an inquiry the subject of employees' benefit funds might properly receive special consideration and also the related subject of a voluntary or compulsory system of old age pensions among persons employed in exceptionally hazardous occupations. There is probably no subject upon which more misleading information has been printed than government insurance as it is practised in certain European countries, and an entirely disinterested qualified investigation of the relation of state effort in this direction might prove decidedly beneficial as an aid towards a better understanding of the true labor problems of the present day. (See Statistical Appendix No. 6.)

The Problem of Employment for the Crippled and the Otherwise Physically Impaired.

(7) Closely related to the subject of industrial diseases and industrial accidents is the necessity for qualified research into the most practical method and means of procuring suitable employment for persons injured, crippled, or otherwise impaired in physical efficiency in consequence of their occupation. At present it is a deplorable fact that these unfortunates often become public charges or find themselves dependent upon a small pension, but with no useful occupation. Inquiry should be made as to whether fairly remunerative employment cannot be found for these unfortunates, or occupations peculiarly adapted to the needs of the adult blind, the one-armed or one-legged, or otherwise physically impaired, so that they may not be forced, after a life of honest industry, to live their remaining years in total idleness as beggars, or otherwise dependent upon private or public charity. (See Statistical Appendix No. 7.)

The Mortality and Morbidity of Wage-earners and the Poor.

(8) There is need of a qualified investigation into the whole subject of mortality and morbidity of wage-earners and their families, including the poor and the pauper class, to determine how far the incidence of premature mortality falls upon this element because of its poverty, and to ascertain the most practical means by which such mortality, both in infancy and old age, may be substantially reduced to the normal rate prevailing among economically better situated elements of the population. In part this inquiry includes the investigation into the subject of the relation of preventable disease to poverty and industrial accidents previously referred to, but in its larger aspects the problem of death is the most significant and perhaps the most important, affecting the welfare and progress of the race. There are, unfortunately, no trustworthy comparative tables of mortality for the different elements of the population according to their economic condition, except such as relate to certain foreign cities and countries, where the conditions of life are probably quite different from those existing in the United States. There can be no question whatever but that, while the crude death-rate has declined within the last generation, there is still a very lamentable amount of premature mortality, especially in infancy, but also at every period of adult life. So that, broadly speaking, even among the more satisfactory conditions of present-day civilization, a relatively small proportion attain to normal old age, which should afford a period of gratifying retrospection after years of continuous industrial activity. The researches into this subject by Metchnikoff and others warrant the conclusion that we are as yet very far from having attained to the largest possible average duration of human life, but in particular is this true of the industrious poor, who are exceptionally exposed to conditions diametrically opposed to good health and long life. Considering that among this element the years of life are practically the only real capital available, and that premature death is the greatest affliction which can come

to a wage-earner's family; and considering further that, aside from every other sentimental consideration, the economic consequences of death alone are often very serious, as including the possible expenses of a long illness and the unfortunately extravagant expenditure for burial and mourning, the economic aspects of premature death assume the greatest possible importance the more thoroughly the entire subject of human mortality is taken into consideration.

It is one of the most definite evidences of modern advancement that at last certain preventable diseases are being singled out for associated effort in the reduction of their frequency, among which for the present pre-eminently stands tuberculosis, as perhaps the most important of them all. Of nearly equal importance, however, are the efforts made towards the reduction of infant mortality along lines of effort which are gradually becoming more scientific and correspondingly more effective, and the same is true of other preventable diseases, such as typhoid, malaria, and yellow fever. The more clearly the facts of the subject are understood and the more effectively the truth is replacing guesswork opinion, the more satisfactory the results to the community at large, and in particular to the wage-earning element and the poor. In no direction is the evidence of the value of scientific research so overwhelming as in the case of malaria and yellow fever, regarding which all former theories were at once overthrown by the results of a qualified inquiry into the actual facts and circumstances favoring the transmission of the disease through a particular species of mosquitoes to human beings. While the risk of epidemics of these diseases can never be entirely eliminated, it has been reduced to a minimum, and it is safe to hold that any subsequent outbreaks will never again assume the serious proportions of the past.

It is necessary to emphasize these evidences of the value of scientific research in one direction to prove the corresponding value of such research in other directions more immediately applicable to the solution of pending problems of social life. However remote the connection may appear between the prob-

lem of preventable disease and the problem of preventable poverty, it will be found upon careful inquiry that there is a very close connection, which warrants the conclusion that the elimination of the one will largely aid in the elimination of the other.

The Problem of Suicide.

(9) One very important subject which has thus far attracted but a very limited amount of attention is the frequency of suicide, which appears to be decidedly on the increase throughout the country, but chiefly among a class which may be considered the failures in life, as it is viewed from a purely individual and material standpoint. Suicide occurs chiefly among men at an age of the greatest possible economic value, when the largest expenditure has been made in behalf of the individual with the hope of an adequate economic return. While much has been written upon the causes of suicide, there has lately been made one suggestion which appears to connect the act of self-murder in many instances with visual defects, or eye-strain. Dr. George M. Gould, of Philadelphia, who has investigated the subject quite extensively, has come to some very definite conclusions which would make it strongly probable that many cases of self-murder could easily be prevented by the correction of such defects and the restoration of normal eyesight, with the resulting elimination of mental and physiological disturbances. Suicide is rarely the result of an immediate impulse, but the contemplation of the act usually extends over a period of years, and, if qualified advice were rendered at the opportune moment, many a one would be assisted over a brief period of despondency and live to fulfil the larger and higher purposes of life. Considering that there occur annually in the United States not less than ten thousand suicides and that a large number of these individuals are bread-winners and the heads of dependent families, including women and children, who because of wilful death become a charge upon the community and a public burden, the subject is one which seems to lend itself to social research

and regarding which a true statement of the facts would be of great practical value. (See Statistical Appendix No. 9.)

The Problem of Physical Deterioration.

(10) In conclusion, I may call attention to the serious problem of possible physical deterioration as the result of the ever-increasing proportion of population living under urban conditions, made best evident in the physical condition of children during the period of school life. Qualified investigations which have been made into this subject indicate the probable intimate relation which exists between unhygienic conditions of home and school life and resulting ill-health and impaired physical efficiency in later years. What has been done in this direction by the New York Committee on the Physical Welfare of School Children is most commendable, but the field of inquiry requires to be very much enlarged, so that the conclusions regarding the different elements of the population according to race and nationality may rest upon a more substantial basis of statistical material than is at present the case.

Investigations made in Scotland by Mackenzie and Foster furnish conclusive evidence that the physical status of the children of the poor is decidedly inferior to that of the children of the prosperous and well-to-do, and from their report, which was published last year, regarding the physical condition of the school children of Glasgow, I quote in part as follows:—

> If we take all the children of ages from 5 to 18, we find that the average weight of the one-roomed boy is 52.6 lbs.; of the two-roomed, 56.1 lbs.; of the three-roomed, 60.6 lbs.; of the four-roomed and over 64.3 lbs. The respective heights are 46.6 inches; 48.1 inches; 50.0 inches; and 51.3 inches. For girls, the corresponding figures are:—Weights, 51.5 lbs.; 54.8 lbs.; 59.4 lbs.; 65.5 lbs. The heights are 46.3 inches; 50.8 inches; 49.6 inches; 51.6 inches. These figures show that the one-roomed child, whether boy or girl, is always on the average distinctly smaller and lighter than the two-roomed; and the two-roomed than the three-roomed; and the three-roomed than the four-roomed. The numbers examined are so large, and the results are so uniform that only one conclusion is possible, viz.:—that the poorest child suffers most in nutrition and in growth. It

cannot be an accident that boys from two-roomed houses should be 11.7 lbs. lighter on an average than boys from four-roomed houses and 4.7 inches shorter. Neither is it an accident that girls from one-roomed houses are, on the average, 14 lbs. lighter and 5.3 inches shorter than the girls from four-roomed houses.

The results of this investigation clearly emphasize the value of social research and of trustworthy social statistics secured by qualified investigators in strict conformity to the methods of science. They teach emphatically the duty of preventive methods in place of mere thoughtless giving of relief, for, as the Committee of the Charity Organization Society of Edinburgh have well said, in their equally important report upon the physical condition of the children of that city, after first calling attention to the needless suffering of children, "plainly and emphatically attributed to an excessive indulgence in strong drink," that "One other fact also is plain, and that is the wastefulness and demoralization caused by unsystematic and indiscriminate charitable relief"; and to this they add the following very suggestive words, "It cannot be doubted that many agencies and persons hinder who seek only to help, and the pity of it is that those who secure the bounty of a well-disposed, but indiscriminate, philanthropy are the least deserving."

The literature of poverty, pauperism, its causes and remedies, is enormous, but almost entirely wanting in a statement of indisputable facts or of social statistics useful, and in truth indispensably necessary, for qualified social research. Efforts without number have been made through all the ages and throughout the world to relieve suffering and sorrow, while few qualified attempts have been made to remove the causes of strictly preventable poverty. In the words of Mr. Edward Dennis, one of the truest friends of the poor of Scotland, whose works, next to those of Chalmers, are the most stimulating and practical, though written forty years ago: "The public seems really awakening at last to some sort of perception of the precipice society in this country is approaching, through the maladministration of the Criminal and Poor Laws. Charity, too, is a frightful evil,—not real charity, but subscription charity. Every

human being has scope enough for all the money and all the effort he can spare in behalf of misfortunes which are known to himself personally, or to the members of his home circle. The gigantic subscription lists, which are vaunted as signs of our benevolence, are monuments of our indifference." *

I have quoted these lines to emphasize the necessity of scientific social research, since there is a very serious danger, if not a practical certainty, that in our indifference toward strictly scientific inquiries in matters of this kind we content ourselves with the result of superficial investigations or unwarranted assurances, which, it must be reluctantly admitted, only too often, if not as a rule, guide in the social legislation of the present day. Dispassionate inquiry and a strict regard for the absolute truth and entire disinterestedness in the statement of the facts and conclusions must needs, in the course of time, secure better results in efforts to ameliorate the condition of the poor than the numerous and varied philanthropic benevolences, tending largely to continue or keep alive the very evils which they are supposed to relieve, to eliminate, or to cure. (See Statistical Appendix No. 10.)

Social research along the lines indicated is, therefore, an imperative duty and the pre-requisite for national social progress, and nowhere in the world more needed than in these United States, where, by a combination of circumstances and conditions the problems of poverty and social discontent are coming to the front at a much earlier period in our national existence than our enormous natural resources would have led us to anticipate. To research work of this character the very best ability may very well devote itself, since the advancement of the nation's interest cannot be better conserved than by the seeking for the truth which concerns national social progress and by a statement of facts and conclusions which will serve as an unerring guide in the patriotic aim to make this land of ours a better land to live

* Consult "The State and Charity," by Thomas Mackay, London, 1898; also "The Dead Hand," by Sir Arthur Hobhouse, London, 1880; and the very early and rare "Plan to Prevent Charitable Donations for the Benefit of Poor Persons from Loss, Embezzlement, Non-Application, Misapplication, Fraud and Abuse in Future," by William Beckwith, London, 1807.

in. The problem of poverty and social discontent resolves itself finally into one of rational education, which, however, is out of the question until the true principles of social science are first ascertained and made known in the form of a broad generalization within the understanding and the comprehension of the American people. Social research which will eliminate the overwhelming amount of error and falsehood which now permeates public opinion upon the most important questions demanding solution will serve the highest possible purpose which any effort in this direction can aim to secure for the betterment of the human race.

STATISTICAL APPENDIX TO PROBLEM NO. 1.

FAMILY EXPENDITURES OF WAGE-EARNERS IN THE UNITED STATES.

Result of Investigation of United States Department of Labor (2,567 Families).

Average Expenditure for	Amount.	Per Cent.
Food	$326.90	42.54
Rent	99.49	12.95
Clothing	107.84	14.04
Fuel and light	40.38	5.25
Insurance (life)	19.44	2.53
Miscellaneous	174.49	22.69
Total	$768.54	100.00

NOTE.—The average income of these 2,567 families was $827.19, which, after deducting average expenditures of $768.54, leaves a margin for savings and investment of $68.65. The average size of the family was 5.3. (See Eighteenth Annual Report of United States Commission of Labor, p. 648.)

STATISTICAL APPENDIX TO PROBLEM NO. 3.

CLASSIFICATION OF SAVINGS-BANK DEPOSITS RECEIVED DURING THE YEAR ENDING OCT. 31, 1904, BY MASSACHUSETTS SAVINGS-BANKS.

	Number.	Amount.
Of $50 and less	1,376,119	$24,887,142.06
Exceeding $50 and not more than $100	192,462	15,534,343.10
" 100 " " 200	82,793	12,762,374.63
" 200 " " 500	62,501	22,223,022.52
" 500 and less than $1,000	17,627	12,540,411.10
Of $1,000 or more	11,685	12,068,984.35
	1,743,187	$100,016,277.76

Twelve thousand eight hundred and sixteen transfers, amounting to $5,449,870.92, are not included in the above table.

COMPARATIVE CLASSIFICATION OF DEPOSITS RECEIVED DURING YEARS 1894, 1899, 1904, BY MASSACHUSETTS SAVINGS-BANKS.

	Percentage of Whole Number of Deposits.		
	1894.	1889.	1904.
Deposits of $50 and less	75.52	77.43	78.94
" over $50 and not exceeding $100	12.06	11.12	11.04
" " 100 " " 200	5.54	5.03	4.75
" " 200 " " 500	4.44	4.30	3.59
" " 500 " " 1,000	1.38	1.24	1.01
" of 1,000 or more	1.06	.88	.67

SAVINGS-BANKS STATISTICS OF CONNECTICUT.

Year ending Oct. 1, 1907.

Items.	Oct 1, 1907.
Number of depositors having less than $1,000	464,341
Amount of such deposits	$99,447,721.30
Depositors having $1,000 and not over $2,000	50,664
Amount of such deposits	$66,877,950.99
Depositors having $2,000 and not over $10,000	24,446
Amount of such deposits	$84,177,692.77
Depositors having over $10,000	422
Amount of such deposits	$5,868,696.50
Total number of depositors	539,873
Total amount of deposits	$256,372,061.56
Largest amount due a single depositor	$54,109.21
Average amount due depositors	$474.87

STATISTICAL APPENDIX TO PROBLEM NO. 4.

STATISTICS OF SAVINGS-BANKS AND INDUSTRIAL INSURANCE IN THE UNITED STATES, 1875–1906.

Years.	Savings-banks.		Industrial Insurance.	
	Number of Deposits.	Amount of Deposits.	Number of Policies.	Amount of Insurance.
1875	2,359,864	$924,037,304	—	—
1876	2,368,630	941,350,255	8,416	$443,072
1877	2,395,314	866,218,306	11,226	1,030,655
1878	2,400,785	879,897,425	22,808	2,027,888
1879	2,268,707	802,490,298	60,371	5,651,589
1880	2,335,582	819,106,973	236,674	20,533,469
1881	2,528,749	891,961,142	367,453	33,501,740
1882	2,710,354	966,797,081	590,053	56,564,682
1883	2,876,438	1,024,856,787	877,334	87,793,650
1884	3,015,151	1,073,294,955	1,092,529	111,115,252
1885	3,071,495	1,095,172,147	1,377,150	145,938,241
1886	3,158,950	1,141,530,578	1,780,372	198,431,170
1887	3,418,013	1,235,247,371	2,310,003	255,533,472
1888	3,838,291	1,364,196,550	2,797,521	305,155,182
1889	4,021,523	1,425,230,349	3,365,461	365,841,518
1890	4,258,893	1,524,844,506	3,883,529	429,521,128
1891	4,533,217	1,623,079,749	4,319,817	481,919,116
1892	4,781,605	1,712,769,026	5,200,777	583,527,016
1893	4,830,599	1,785,150,957	5,751,514	662,050,129
1894	4,777,687	1,747,961,280	6,833,439	800,946,170
1895	4,875,519	1,810,597,023	6,952,757	820,740,641
1896	5,065,494	1,907,156,277	7,388,119	888,266,586
1897	5,201,132	1,939,376,035	8,005,384	996,139,424
1898	5,385,746	2,065,631,298	8,798,480	1,110,073,519
1899	5,687,818	2,230,366,954	10,050,847	1,293,125,522
1900	6,107,083	2,449,547,885	11,219,296	1,468,986,366
1901	6,358,723	2,597,094,580	12,337,022	1,640,857,553
1902	6,666,672	2,750,177,290	13,448,124	1,806,890,864
1903	7,035,228	2,935,204,845	14,603,694	1,977,599,397
1904	7,305,443	3,060,178,611	15,674,384	2,135,859,103
1905	7,696,229	3,261,236,119	16,872,583	2,309,754,235
1906	8,027,192	3,482,137,198	17,841,396	2,453,616,207

STATISTICAL APPENDIX TO PROBLEM NO. 5.

COMPARATIVE MORTALITY STATISTICS BY OCCUPATIONS, ENGLAND AND WALES, 1890–92.

Rate per 1,000 *Living at each Period of Life.*

Ages.	Occupied Males (England and Wales).	Occupied Males Industrial Districts.	Occupied Males Agricultural Districts.	Unoccupied Males.
15–19	2.6	3.1	2.1	35.9
20–24	5.1	5.5	4.7	29.6
25–34	7.3	8.7	6.0	27.1
35–44	12.4	15.9	9.0	35.7
45–54	20.7	27.8	13.8	37.8
55–64	36.7	50.2	26.1	59.4
65 and over	102.3	120.4	93.9	105.9

THE PERCENTAGE DISTRIBUTION OF DEATHS FROM CONSUMPTION IN THE MORTALITY FROM ALL CAUSES BY SELECTED OCCUPATIONS.

Industrial Mortality' Experience of the Prudential Insurance Company of America, 1897–1906.

Occupations.	Percentage of Deaths from Consumption at Specified Periods of Life.				
	15–24.	25–34.	35–44.	45–54.	55–64.
Brass Workers	59.1	50.0	45.1	24.1	20.4
Carpet and Rug Makers	52.9	45.5	35.3	20.8	11.8
Glass-cutters	26.9	46.7	40.7	25.0	12.5
Grinders	57.1	70.8	63.2	40.0	25.0
Hatters	53.8	55.4	45.4	26.7	14.8
Polishers	45.8	56.0	42.7	22.9	21.1
Printers	48.6	56.4	40.5	19.9	9.2
Spinners	46.4	50.0	44.4	25.9	2.7
Stone Workers	47.6	52.6	47.7	39.2	26.1
Tailors	39.6	58.8	36.0	17.3	10.1
Weavers	39.8	53.4	38.1	25.7	10.9
Woollen Mill Employees	35.0	43.8	35.7	21.1	12.5

MORBIDITY STATISTICS OF MASSACHUSETTS, 1905.

Result of State Census.

Ages.	Acute Diseases (accidents included).			
	Males.		Females.	
	Number of Cases.	Rate per 1,000 Living.	Number of Cases.	Rate per 1,000 Living.
Under 16	732	1.55	648	1.37
17–29	409	1.11	451	1.10
30–49	557	1.30	556	1.28
50–69	310	1.67	319	1.53
70 and over	71	1.75	97	1.83
All ages	2,081	1.38	2,089	1.32

MORBIDITY STATISTICS OF MASSACHUSETTS, 1905.

Result of the State Census.

Ages.	Chronic Diseases (accidents included).			
	Males.		Females.	
	Number of Cases.	Rate per 1,000 Living.	Number of Cases.	Rate per 1,000 Living.
Under 16	623	1.32	568	1.20
17–29	979	2.65	923	2.25
30–49	2,356	5.48	2,511	5.78
50–69	5,394	29.01	4,253	20.32
70 and over	2,468	60.94	2,125	40.19
All ages	11,825	7.85	10,392	6.56

NOTE.—For a discussion of these statistics see my article in the *Spectator* for Dec. 19 and 26, 1907.

STATISTICAL APPENDIX TO PROBLEM NO. 6.

THE FATAL ACCIDENT RATES IN COAL MINING AND RAILROAD TRANSPORTATION IN THE UNITED STATES, 1890–1906.

Rates per 1,000 of Persons Employed.

	Railroad Mail Clerks, etc.	Railroad Trainmen.	Railroad Switchmen, Flagmen, Watchmen.	Other Railroad Employees.	Total Railroad Employees.	Coal Mining, North America.
1890	0.69	9.52	6.21	1.36	3.27	2.43
1891	2.16	9.57	7.44	1.42	3.39	3.30
1892	0.78	8.88	6.85	1.24	3.11	2.51
1893	1.50	8.72	6.67	1.32	3.12	2.53
1894	0.58	6.43	5.00	1.00	2.34	2.48
1895	0.99	6.45	5.75	0.93	2.31	2.67
1896	0.67	6.57	4.74	0.93	2.25	2.79
1897	1.85	6.05	4.59	0.83	2.06	2.34
1898	0.88	6.68	5.14	0.88	2.24	2.59
1899	0.72	6.46	5.61	1.11	2.38	2.98
1900	0.46	7.30	5.36	1.14	2.51	3.25
1901	0.78	7.35	3.68	1.18	2.50	3.24
1902	0.95	7.43	3.96	1.20	2.50	3.49
1903	1.75	8.16	5.66	1.24	2.75	3.14
1904	1.60	8.33	4.95	1.29	2.80	3.37
1905	0.99	7.50	2.99	1.15	2.43	3.44
1906	1.20	8.09	2.96	1.24	2.58	3.16

THE PERCENTAGE DISTRIBUTION OF DEATHS FROM ACCIDENTS IN THE MORTALITY FROM ALL CAUSES BY SELECTED OCCUPATIONS.

Industrial Mortality Experience of the Prudential Insurance Company of America, 1897–1906.

Occupations.	Percentage of Deaths from Accidents at Specified Periods of Life.				
	15–24.	25–34.	35–44.	45–54.	55–64.
Boatmen	54.6	24.7	18.1	31.0	14.7
Captains (navigation)	60.0	66.7	14.3	30.0	13.3
Electric Linemen	55.3	56.8	38.2	30.0	—
Fishermen	45.5	36.8	23.8	10.0	7.5
Miners (1897–1902)	51.4	48.5	40.4	18.2	10.8
Quarrymen	77.8	45.5	32.4	28.6	18.6
Railroad Brakemen	83.4	69.6	52.7	48.1	29.6
Railroad Conductors	50.0	42.9	31.0	22.7	17.6
Railroad Engineers	40.0	61.9	37.9	25.0	19.5
Railroad Firemen	64.8	58.9	43.5	14.3	—
Railroad Flagmen and Switchmen	61.5	50.0	34.9	25.5	20.6
Sailors	50.7	17.3	24.2	12.7	10.2

STATISTICAL APPENDIX TO PROBLEM NO. 7.

PERSONS HAVING DEFECTIVE PHYSICAL CONDITIONS,—MASSACHUSETTS, 1895.

Result of the State Census.

	Males.	Females.	Total.
Acute diseases	1,132	1,361	2,493
Chronic diseases	7,034	6,394	13,428
Maimed	2,543	267	2,810
Lame	4,175	2,490	6,665
Bedridden	55	188	243
Paralytic	1,394	1,098	2,492
Epileptic	469	281	750
Insane	584	926	1,510
Idiotic	571	365	936
Deaf	1,494	2,324	3,818
Dumb	50	37	87
Deaf and Dumb	423	334	757
Blind	1,672	1,269	2,941
Other defective physical conditions	690	435	1,125
Physical defects in combinations	1,150	656	1,806
Total	23,436	18,425	41,861

STATISTICAL APPENDIX TO PROBLEM NO. 9.

COMPARATIVE MORTALITY FROM SUICIDES.

American Cities, 1892–1906.

Years.	Population.	Suicides.	Rates per 100,000 Population.
1892	11,541,918	1,568	13.6
1893	11,862,348	1,937	16.3
1894	12,192,328	1,951	16.0
1895	12,535,743	1,992	15.9
1896	12,887,435	2,135	16.6
1897	13,250,791	2,372	17.9
1898	13,669,422	2,397	17.5
1899	14,014,422	2,327	16.6
1900	14,415,482	2,365	16.4
1901	14,829,438	2,489	16.8
1902	15,258,316	2,717	17.8
1903	15,701,501	2,998	19.1
1904	16,159,758	3,285	20.3
1905	16,643,724	2,987	18.0
1906	17,135,840	2,919	17.0
1892–1896	61,019,772	9,583	15.7
1897–1901	70,179,555	11,950	17.0
1902–1906	80,899,139	14,906	18.4

STATISTICAL APPENDIX TO PROBLEM NO. 10.

AVERAGE WEIGHT AND HEIGHT OF BOYS IN GLASGOW SCHOOLS ACCORDING TO THE SIZE OF HOUSING ACCOMMODATIONS.

Age.	Average Weight (*Pounds*).				Average Height (*Inches*).			
	1 Room.	2 Rooms.	3 Rooms.	4 Rooms.	1 Room.	2 Rooms.	3 Rooms.	4 Rooms.
5	37.2	38.6	39.5	40.1	39.0	39.9	40.7	41.4
6	40.4	41.6	42.9	43.4	41.1	41.8	42.5	43.0
7	43.3	45.0	47.0	47.6	42.7	43.6	45.0	45.1
8	48.0	48.9	50.4	51.6	45.0	45.6	46.4	47.1
9	51.4	53.1	54.8	56.3	46.5	47.6	48.2	48.9
10	55.5	57.7	59.7	61.0	48.3	49.3	50.1	50.8
11	60.0	62.2	64.5	66.2	50.1	50.9	51.7	52.4
12	65.3	67.2	69.3	71.9	51.8	52.6	53.5	54.4
13	69.9	72.3	75.3	76.8	53.4	54.1	55.1	55.8
14	73.0	76.7	81.6	84.2	54.3	55.4	57.0	58.0

AVERAGE WEIGHT AND HEIGHT OF GIRLS IN GLASGOW SCHOOLS ACCORDING TO THE SIZE OF HOUSING ACCOMMODATIONS.

Age.	Average Weight (*Pounds*).				Average Height (*Inches*).			
	1 Room.	2 Rooms.	3 Rooms.	4 Rooms.	1 Room.	2 Rooms.	3 Rooms.	4 Rooms.
5	36.6	37.8	38.0	39.2	38.9	39.8	40.2	41.0
6	39.5	40.5	41.0	43.1	40.6	41.4	42.0	43.2
7	42.9	43.7	44.6	46.0	42.7	43.2	43.9	44.7
8	45.9	47.1	48.6	50.3	44.3	45.0	45.9	46.5
9	49.6	51.4	52.8	54.7	46.2	46.9	47.7	48.6
10	53.5	55.4	57.6	58.7	47.8	48.7	49.6	50.3
11	59.3	60.1	62.4	64.6	49.9	50.5	51.3	52.1
12	64.0	66.3	68.7	70.6	51.6	52.6	53.4	54.1
13	71.9	73.9	76.3	79.3	53.9	54.8	55.5	56.4
14	74.0	79.8	84.3	89.1	54.8	56.3	57.6	58.6

CITY LIFE AND MALE MORTALITY.

By J. E. Baker.

The complexity of modern life appears in concentrated solution in the city. Here we find the demoralizing luxury of the ultra-rich and the awful squalor of the very poor; here, too, the nervous strain and the alluring temptations of the great industrial class, a class far more numerous and far more important than both the extremes of wealth and poverty taken together. Hence Dr. Ogle characterizes the city as "a mighty vampire, continually sucking the strongest blood of the country to keep up an abnormal supply of energy it has to give out in the excitement of a too fast and unwholesome life."

The breaking point in human vitality is death. How people die indicates in a considerable measure how they have lived and how succeeding generations will live. Says Dr. Farr: "There is a relation between death and national primacy . . . ; there is a relation between the forms of death and moral excellence or infamy." The economic life of the nation depends primarily upon the male sex, and more especially upon it during its years of vigorous maturity. Accordingly, we ought not to be satisfied with the mere knowledge that city death-rates are usually higher than those for the country, but should seek to determine how deadly is city life to men as a class.

The registration area, comprising the states of Rhode Island, Massachusetts, New York, New Jersey, Connecticut, New Hampshire, Michigan, Maine, and Vermont, by the United States census of 1900, had a death-rate in cities of 18.6 and in the rural portion of 15.4 per thousand of population. This higher city death-rate fell more heavily upon men than upon women, for, while the male death-rate in cities was 19.8 per

thousand, the female death-rate was only 17.5 per thousand. In the rural portion of the area, however, the death-rates for the two sexes were fairly equal, the male death-rate being 15.8 and the female 15 per thousand of respective populations. Since the male rate is generally higher than the female rate, it will be convenient to call this *difference against the males* "excess." Thus in the registration area the urban excess is higher than the rural excess by 1.5 per thousand of population. Is this typical of the whole United States?

For territory outside of the registration area the census of 1900 did not compute death-rates for the reason that the prevailing lax regulations permit many deaths to go unrecorded. It may be assumed, however, that the deaths of males are recorded with about the same degree of fidelity as the deaths of females: hence deficiencies in the rates which might be computed would be of amount rather than of proportion. From the laws of probability, then, it may be assumed that the omissions in each sex will be approximately equal, and, therefore, the male and female death-rates may be compared with each other, and that comparison carried from state to state.

Outside the registration area no distinction is made in the census between urban and rural populations or urban and rural deaths, but, if city life is particularly deadly to men, then, other conditions being equal, in those states where a large proportion of the population is found in cities, we shall find a high male excess. The census sets a population of 8,000 as entrance requirement to the rank of city, so the proportion of a state's population found in cities of 8,000 or more is used to determine the rank of that state in urban importance.

So many local influences are at work in every community, subduing or accentuating any general force, that in comparisons between individual states the universal law may be completely hidden. Therefore, it is necessary, after ranking the states according to urban importance, to consider them in groups. Computing the death-rate for each sex in each group (Table I),

TABLE I.

	Total Population found in Cities of 8,000 or over.	Male Death-rate.	Female Death-rate.	Ratio Male to Female Death-rate.	"Excess."
Rhode Island	81.2				
Massachusetts	76.0				
New York	68.5				
New Jersey	61.2				
Connecticut	53.2				
Illinois	47.1				
Maryland	46.9				
Pennsylvania	45.5				
California	43.7				
Delaware	41.4	16.88	14.90	1.133	1.98
New Hampshire	38.6				
Ohio	38.5				
Colorado	38.1				
Washington	31.9				
Michigan	30.9				
Missouri	30.8				
Wisconsin	30.7				
Montana	27.0				
Minnesota	26.8				
Utah	25.2	13.04	11.55	1.129	1.49
Indiana	24.2				
Wyoming	24.1				
Oregon	23.9				
Maine	23.7				
Louisiana	22.8				
Kentucky	16.4				
Iowa	16.8				
Nebraska	15.8				
Florida	15.0				
Virginia	14.7	12.47	11.88	1.049	0.59
Kansas	14.0				
Tennessee	13.4				
Texas	11.3				
Vermont	11.2				
Georgia	11.0				
West Virginia	7.7				
South Carolina	7.5				
Alabama	7.3				
Arkansas	5.4				
North Carolina	5.1	12.87	12.66	1.016	0.21
Oklahoma	5.0				
North Dakota	3.0				
South Dakota	2.6				
Mississippi	2.6				
Nevada	0				
Indian Territory	0				
New Mexico	0				
Idaho	0				
Arizona	0	11.04	11.06	0.998	−0.02

we find that in the first group of states the male excess is 1.98 per thousand of population; in the second group, 1.49; in the third, .59; in the fourth, .21; and, in the fifth, a minus .02, that is, a female excess. The gradation is marked by its regularity.

But perhaps this smaller male excess in the lower groups is due to the insufficiency of data. For instance, if the normal male death-rate is 16 and the female death-rate is 14, the excess is 2; but, if only half the data are gathered, the rates will be 8 and 7, respectively, and the excess will be only one, giving the gradation just noted. To satisfy this sound objection, use the method of ratios, with the female death-rate as the base, or 1. The ratio between 8 and 7 is the same as between 16 and 14. From this method the ratio in the first group is approximately 1.133; in the second group it is 1.129; in the third group, 1.049; in the fourth, 1.016; and, in the fifth, .998, giving the same gradation as before (See Table I, columns 2 and 3). The fact is established, then, that the male excess increases in size as the cities increase in importance.

The excess in the death-rate among males observable in the cities is not due to a peculiar age composition in the urban population. This is made evident by the census statistics for the registration area. Table II shows, in each of the eight age groups considered, an excess in the death-rate among males in cities as compared with the death-rate among males in the rural districts.

TABLE II.

EXCESS IN REGISTRATION STATES.

Ages	Under 1	Under 5	5–14	15–24	25–34	35–44	45–64	65–
Cities	31.6	10.6	0.1	0.7	1.3	2.1	4.0	7.6
Rural	27.4	6.4	.0	—0.1	—1.0	—0.4	0.7	6.3
Difference against city	4.2	4.2	0.1	0.8	2.3	2.5	3.3	1.3

Compiled from United States Census, *Vital Statistics*, Vol. I, p. lxxx.

To continue the investigation, each state may be studied with four age groups; viz., 0 to 14, 15 to 24, 25 to 54, and 55 upwards, corresponding to the periods of childhood, youth, maturity, decline. By using the same methods of computing rates and the same groups of ten states in each age group, as described in the preceding paragraphs, fairly similar results are obtained. In both the early periods, childhood and youth, the ratio of male to female death-rate shows a sudden drop between the first and second groups of states, while the third, fourth, and fifth groups show a fairly downward tendency in childhood and an indifferent tendency in youth (See Table III*a*). In the period corresponding to decline the movement is so irregular that any interpretation would be too involved and lengthy for present purposes, if at all plausible when done. It does not directly upset the thesis of this study, but it certainly does not support it, except in a far-fetched fashion, when the first two groups are compared with the last three (See Table III*b*).

But the age period 25 to 54, maturity, the age of greatest productivity, of greatest commercial stress, the age of home making and family rearing, the age of greatest vital interest and of greatest industrial importance—this age, if any, should afford the crucial test as to whether or not the city is a ruthless destroyer of men. With a ratio falling by remarkably regular steps from 1.172 in the first group of states to 1.047 in the second group, then to .914 in the third, and .879 and .815 in the fourth and fifth, respectively, the hustle and dash, the nervous strain, the luxury and allurements of city life, are proved to be positive promoters of male mortality.

TABLE IIIa.

ANALYSIS BY AGE GROUPS AND GROUPS OF TEN STATES.

	Ages 0–14.			Ages 15–24.		
	Male Death-rate.	Female Death-rate.	Ratio Male to Female Death-rate.	Male Death-rate.	Female Death-rate.	Ratio Male to Female Death-rate.
Rhode Island .						
Massachusetts .						
New York . . .						
New Jersey . .						
Connecticut . .						
Illinois						
Maryland . . .						
Pennsylvania .						
California . . .						
Delaware . . .	20.1	16.7	1.204	5.77	5.31	1.087
New Hampshire,						
Ohio						
Colorado . . .						
Washington . .						
Michigan . . .						
Missouri						
Wisconsin . . .						
Montana . . .						
Minnesota . . .						
Utah	13.03	11.6	1.123	5.2	5.37	0.968
Indiana						
Wyoming . . .						
Oregon						
Maine						
Louisiana . . .						
Kentucky . . .						
Iowa						
Nebraska . . .						
Florida						
Virginia	12.6	11.2	1.125	5.65	6.19	0.913
Kansas						
Tennessee . . .						
Texas						
Vermont . . .						
Georgia						
West Virginia .						
South Carolina .						
Alabama . . .						
Arkansas . . .						
North Carolina .	16.9	15.7	1.076	6.62	7.08	0.935
Oklahoma . . .						
North Dakota .						
South Dakota .						
Mississippi . . .						
Nevada						
Indian Territory,						
New Mexico . .						
Idaho						
Arizona	16.4	15.6	1.051	8.47	9.02	0.939

TABLE IIIb.

Analysis by Age Groups and Groups of Ten States.

	Ages 25–54.			Ages 55 and over.		
	Male Death-rate.	Female Death-rate.	Ratio Male to Female Death-rate.	Male Death-rate.	Female Death-rate.	Ratio Male to Female Death-rate.
Rhode Island .						
Massachusetts .						
New York . . .						
New Jersey . .						
Connecticut . .						
Illinois						
Maryland . . .						
Pennsylvania .						
California . . .						
Delaware . . .	11.0	9.47	1.172	51.7	46.8	1.105
New Hampshire,						
Colorado . . .						
Washington . .						
Michigan . . .						
Missouri						
Wisconsin . . .						
Montana . . .						
Minnesota . . .						
Utah	8.54	8.16	1.047	45.6	35.2	1.295
Indiana						
Wyoming . . .						
Oregon						
Maine						
Louisiana . . .						
Kentucky . . .						
Iowa						
Nebraska . . .						
Florida						
Virginia	8.3	9.08	0.914	40.9	37.0	1.105
Kansas						
Tennessee . . .						
Texas						
Vermont . . .						
Georgia						
West Virginia .						
South Carolina .						
Alabama . . .						
Arkansas . . .						
North Carolina .	9.28	10.55	0.879	37.7	34.2	1.102
Oklahoma . . .						
North Dakota .						
South Dakota .						
Mississippi . . .						
Nevada						
Indian Territory,						
New Mexico . .						
Idaho						
Arizona	10.04	12.32	0.815	41.8	38.0	1.100

Tables compiled by Westergaarde suggest that probably the city, with its physicians and hospital service and its freedom from severe muscular work, saves female life during this the child-bearing period rather than destroys male life at such a wholesale rate. The succeeding table, however, which shows that from these very causes connected with child-bearing the American city is more fatal to women than is the country, refute the suggestion squarely, so far as the United States is concerned.

It is plainly set forth now that, with the increase of cities in number and size, the death-rate of men grows higher and higher in comparison with the death-rate of women. In some groups of states during certain age periods this general statement does not hold good, but in the main it seems to be true. The natural inquiry is, What is the reason? To answer, in general terms, that city life is nerve-racking, artificial, and unsanitary, is to answer nothing that will point out any remedy. We must know at what *points* we are attacked before we can concentrate our forces to repel the assault. So an inquiry was made into the *causes* of death, to ascertain, if possible, what diseases are particularly fatal to men in cities.

The high excess of male mortality in cities in the registration area has been found to be typical of the whole United States hence the registration data for causes of death may be considered fairly indicative of conditions throughout the country.

On page 566, Vol. I, *Vital Statistics*, Census of 1900, a list of classified causes of death is given for the registration area, with the death-rates per 100,000 of population for each sex, from each cause, for both the urban and the rural districts (See Table IV). It will be noted that the city gives an excess from all causes of 234 (*Ibid.*, col. 5), while the country gives an excess of 85.2 (col. 6). Thus the city excess is 148.8 higher than the country excess (col. 7). We shall call this difference between the *excesses* of the respective districts "*preponderance.*" By looking at the causes, it will be seen that only one class, Diseases of the Circulatory System, gives a large rural preponderance (in other words, a city *female* preponderance) of 24.3;

TABLE IV.

CAUSES OF DEATH.

Rates per 100,000 *of Population.* (*Registration Area.*)

(Vol. I, *Vital Statistics*, Census 1900, p. 566.)

	Cities.		Rural.		City Excess.	Rural Excess.	City Preponderance.
	Male.	Female.	Male.	Female.			
I. General Diseases . .	878.7	794.1	621.8	677.0	84.6	—55.2	139.8
Venereal Diseases .	3.8	3.0	1.1	0.8	0.8	0.3	0.5
Alcoholism	14.1	3.7	5.7	1.1	10.4	4.6	5.8
Old Age	30.5	45.9	69.2	79.8	—15.4	—10.6	—4.8
Consumption . . .	234.3	176.4	124.9	143.8	57.9	—18.9	76.8
Cancer and Tumor	46.4	83.1	51.8	91.8	—36.7	—40.0	3.3
II. Nervous System . .	221.3	195.7	232.0	212.2	25.6	19.8	5.8
III. Of the Circulatory System	150.0	146.6	177.2	149.5	3.4	27.7	—24.3
Heart Disease . .	130.6	132.1	156.8	134.3	—1.5	22.5	—24.0
IV. Respiratory System .	356.6	314.4	200.0	198.0	42.2	2.0	40.2
Pneumonia . . .	252.4	214.6	136.9	134.8	47.8	2.1	45.7
V. Digestive System . .	96.0	93.2	89.9	91.3	2.8	—1.4	4.2
VI. Urinary and Sexual Organs	131.4	114.3	106.5	75.3	17.1	31.2	—14.1
VII. Connected with Pregnancy	—	27.6	—	24.5	—27.6	—24.5	—3.1
VIII. Bones and Joints . .	5.1	3.2	4.1	3.4	1.9	0.7	1.2
IX. Skin	3.5	2.8	3.2	2.5	0.7	0.7	.0
X. Absorbent System .	1.3	1.3	1.6	1.7	0	—0.1	—0.1
XI. Accidents and Injuries,	127.2	42.8	122.9	41.4	84.4	81.5	2.9
Suicides	9.7	3.3	5.3	2.4	6.4	2.9	3.5
Unknown	9.4	7.5	21.7	18.9	1.9	2.8	—0.9
All Causes	1,980.5	1,746.5	1,580.9	1,495.7	234.0	85.2	148.8
	(1)	(2)	(3)	(4)	(5)	(6)	(7)

and two classes, General Diseases and Diseases of the Respiratory System, give a city preponderance of 139.8 and 40.2, respectively; while the other classes about balance up each other.

In the difference, therefore, between the city preponderance of 180 from General Diseases and those of the Respiratory System, and the rural preponderance of 24.3 from Diseases of the Circulatory System, we have somewhat more than accounted for the general city preponderance of 148.8, having 155.7.

General Diseases include ordinary fevers, contagions, bodily disorders, alcoholism, old age, venereal troubles, cancers, tumors, consumption, etc. It is the most numerous class of diseases, being divided by the census into four sub-classes, containing in all 41 specific diseases, and being responsible for nearly a half of all deaths. No one of these specific diseases has a very large city preponderance except consumption. Consumption gives the alarming city preponderance of 76.8, nearly a half of the *total* city preponderance.

Diseases of the Respiratory System are seven in number, and the preponderances balance one another in such a manner as to leave a total *rural* preponderance, if it were not for pneumonia, which with a city preponderance of 45.7 brings the city preponderance for this class up to 40.2. From this table (Table IV), then, it would seem that two specific diseases, pneumonia and consumption, are responsible for nearly six-sevenths of the city preponderance, the exact figures being 122.5 to 148.8. All of the other 108 specifically mentioned diseases so balance each other as to yield a city preponderance of only 26.3,—barely one-third as large as consumption alone.

The "hustle and dash" and "nervous strain" of city life do not seem to be so fatal to men as might have been expected, for Diseases of the Nervous System give a city preponderance of only 5.8, and suicides one of only 3.5. Manufacturing and congested traffic is hazardous to men, but the country has dangers as well, so the city preponderance in Accidents and Injuries rises no further than 2.9. The immoral allurements of city life do not assume high importance, as far as *death-rates* or preponderances are concerned, due largely, no doubt, to the fact that dissipation in most cases first weakens the vitality, after which other complications set in, to which the death is

ascribed.* In proportion to the size of the death-rates, however, the city preponderances of 0.5 in Venereal Disease and of 5.8 in Alcoholism are very large. Westergaarde's theory, that cities save female life during the child-bearing age, is apparently disproven, for the city shows a higher female death-rate than the country in diseases connected with pregnancy and in diseases of the urinary and sexual organs, the city rate being 3.1 higher in the former case and 39.0 higher in the latter. In fact, the *country* seems to be such a saver of female life from diseases of the urinary and sexual organs that, while the city death-rate for this class is 24.9 higher than the country rate among *males*, it is 39.0 higher among females. Of course, the registration area takes in practically none of the newer agricultural regions, so that as between these and city life Westergaarde's position may be correct.

Willcox, in his Census Bulletin on Mortality, suggests that the male sex may be endowed with less vitality than the generally supposed "weaker sex."† If this be true, the weakness manifests itself most evidently through the medium of pneumonia and consumption especially. Whether the fatality of these diseases is a sign of inherent weakness or of increased exposure is worthy of closer inspection.

Table V presents the classified occupations of males in the United States as given in the Census of 1900.‡ Opposite each class and occupation is the death-rate per 100,000 male population from consumption and from Diseases of the Respiratory System. Where females are engaged in the same or similar occupations, the female death-rate from these causes is likewise put down.

* Families of the deceased influence the physician to conceal shameful causes of death.

† "For the differences in the death-rates of the sexes in infancy, when such social causes as greater exposure of males to dangers of all sorts are absent, other than social forces must be appealed to for explanation." Willcox, p. 725.

‡ Part I, *Vital Statistics*, p. cclxii.

TABLE V.

OCCUPATIONS IN RELATION TO CONSUMPTION AND DISEASES OF THE RESPIRATORY SYSTEM.

Rates per 100,000 *Respective Population.* (*Registration Area.*)

(Vol. I, *Vital Statistics*, Census 1900, p. cclxii.)

OCCUPATION.	Consumption.		Respiratory Diseases.	
	Male.	Female.	Male.	Female.
Professional Class	182.2	—	187.1	
1. Architects, Artists, etc.	188.9	—	102.1	
2. Clergymen	123.5	—	340.7	
3. Journalists	188.4	—		
4. Lawyers	139.9	—	178.4	
5. Musicians	349.8			
6. Physicians	168.8	100.2*	243.0	121.7*
7. Teachers	144.0	126.1	144.0	61.9
8. Clerical and Official	304.2	—	167.7	
9. Book-keepers and Clerks	398.0	198.0	173.3	64.7
10. Bankers, Brokers, etc.	92.1	—	142.7	
11. Collectors and Agents	131.2	—	144.7	
Mercantile	165.8	—	167.0	
12. Pharmacists	305.5	—	230.9	
13. Merchants	163.8	—	216.7	
14. Pedlers, etc.	250.9	—	143.3	
15. Public Entertainers	268.5	—	194.5	
16. Hotel and Boarding-house Keepers	210.3	—	255.4	
17. Saloon and Restaurant	285.6	—	176.7	
18. Police and Military	254.8	—	179.7	
19. Barbers, etc.	334.9	—	107.5	
20. Janitors	251.4	—	359.1	
21. Police, Watchmen, and Detectives	136.7	—	213.2	
Laboring	376.0	—	313.2	
22. Laborers	370.7	—	323.5	
23. Servants	430.3	319.7	222.5	222.6
Industrial	262.1	—	181.2	
24. Bakers and Confectioners	250.1	—	155.7	
25. Blacksmiths	212.9	—	227.0	
26. Boot and Shoe	135.5	—	120.0	
27. Brewers, etc.	256.8	—		
28. Butchers	287.7	—	201.8	
29. Cab. and Upholsterers	359.1	—	181.6	
30. Carpenters	231.0	—	191.5	
31. Cigar and Tobacco Workers	476.9	—	312.7	
32. Printers, etc.	435.9	—	154.5	
33. Coopers	399.5	—		
34. Engineers (Stationary)	229.7	—	212.9	
35. Iron and Steel Workers	236.2	—	224.7	
36. Leather Workers	227.3	—	97.4	
37. Machinists	195.9	—	141.9	
38. Marble and Stone Cutters	540.5	—	201.7	

* Includes female nurses and midwives.

TABLE V.—*Continued.*

OCCUPATIONS IN RELATION TO CONSUMPTION AND DISEASES OF THE RESPIRATORY SYSTEM.

Rates per 100,000 *Respective Population.* (*Registration Area.*)

(Vol. I, *Vital Statistics*, Census 1900, p. cclxii.)

OCCUPATION.	Consumption.		Respiratory Diseases.	
	Male.	Female.	Male.	Female.
Industrial (continued):				
39. Masons	293.9	—	311.1	
40. Textile Factory Hands	207.6	144.1	107.4	46.8
41. Millers (Flour, etc.)	198.5	—	297.8	
42. Painters and Glaziers	319.3	—	190.9	
43. Plumbers	294.0	—	123.0	
44. Tailors	218.0	130.1	159.8	66.1
45. Tinners	365.3			
Agricultural, Transportation, and Outdoor	147.2	—	181.5	
46. Boatmen	256.8			
47. Draymen, Hackmen, and Teamsters	261.4	—	170.3	
48. Farmers and Farm Labor	111.7	—	198.0	
49. Gardeners, Nurserymen	186.6	—	230.3	
50. Liverymen	267.5	—	141.4	
51. Lumbermen	107.1	—	122.3*	
52. Miners	120.9	—	102.8	
53. Sailors	333.0	—	310.0	
54. Railroad Men	129.8	—	79.5	

It will be noticed that the death-rate for the Professional class from consumption is 182.2; for the Mercantile class, 165.8; for the Laboring and Servant class, 376.0; and for the Manufacturing and Industrial class, 262.1; for Agriculture, Transportation, and the general Outdoor class, only 147.2. For the strictly rural classes, farmers and lumbermen, the rate is still lower,—only 111.7 and 107.1, respectively. Only one of all the fifty-four mentioned occupations has a lower death-rate from this cause than farmers. Bankers and brokers who can afford the most sanitary homes, frequent vacations and travel for recuperation, and the very best medical care that the times offer, have a death-rate from consumption of 92.1. Their clerks and book-keepers, at the same time, have a death-rate from this cause of 304.2 and 398.0, respectively. Thus it would seem that indoor life is particularly favorable

* Pneumonia alone.

to a high death-rate from consumption. The fact that women in the country have a higher death-rate from consumption than men, though lower than the city female death-rate from this cause, bears out the conclusion (See Table IV). To be sure, sailors have the high rate of 333, but their case is obviously exceptional. Boatmen are in a similar class. Gardeners and nurserymen seem to be somewhat of an exception, but their rate of 186.6 pales into insignificance when compared with 540.5, the death-rate from consumption for stone-cutters, the 435.9 for printers, the 430.3 for servants, and the 476.9 for tobacco workers.

But, if indoor life is conducive to consumption, should not the women be as subject to consumption as men? which is not the case. Women are not, however, subject to the *same* indoor conditions as men. If we compare men and women in the same occupations, we find that in each instance the female death-rate is much lower (of physicians, teachers, book-keepers, servants, and textile workers,—numbers 6, 7, 9, 23, 40,—Table V). This may indicate that women are more able to withstand disease than men, but more likely these figures result from the different age composition of the sexes in these occupations. It is well known that most of the females in these occupations are young. They marry out of the occupation into homes before disease gets hold of them or before the disease is manifest, so the occupation is not charged up with the death. Of the reported deaths in the registration area, 75.6 per cent. of the male decedents had gainful occupations against 13.5 per cent. of the female decedents.* Consequently, a comparison between men and women under similar conditions must be a comparison between men in the office, shop, and factory, and women in the home. The city home may not be of the best, but it is not open to as much contagion as the factory; it has no such dusty air as the factory; it remains the same from year to year, so that the wife becomes physically adjusted to it. Neither is she subject to the exposure to change which results from going from a hot, stuffy factory into a cold, windy

* Census 1900, *Vital Statistics*, Part I, p. cclix.

street. So the conclusion is that indoor occupations account in a large part for the high excess of male mortality in the city resulting from consumption.

The case for Diseases of the Respiratory System is not so clear. It will be remembered that from this cause there is a city preponderance of 40.2,—something over half as large as consumption. In the rural districts the male and female death-rates are nearly equal, being 136.9 and 134.8 respectively (See Table V). While in the city there is a wide discrepancy, the rates being 252.4 and 214.6 respectively. The city preponderance is due, then, to one of two things, either that the country is extra severe to women or that the city is extra severe to men. The latter seems to be the case, for the city is more severe on women as well as on men, having a female pneumonia death-rate 79.8 higher than the country (See Table IV, cf. cols. 2 and 4). This situation is only accentuated in the case of men, the city rate being 115.5 higher than the country rate (*Ibid.*, cf. cols. 1 and 3). We must look within the city, then, for the conditions that bring about the male excess.

If we compare the male death-rate from this cause with the female death-rate in the same occupations, as was done before (See Table V), we find that in each case, except servants, the male rate is much the larger. These comparisons are rather more fair than in the case of consumption, for pneumonia, not being a slow disease, like consumption, is nearly as fatal to the young as to the middle-aged, and is more the result of immediate conditions than of long-continued conditions. Therefore, the age composition of the occupations would not have so much effect. Why women-servants should have such a high rate from Diseases of the Respiratory System is not apparent. It may be that, because they are in the homes of others, they do not receive sufficient care; while men-servants, on the other hand, in many cases have homes, and, in case they do not, the masculine propensity to give up work and to demand attention when an ailment is felt procures them help.

The greater indoor life of the city, while it seems to account for the high city death-rate from consumption, does not seem to

do so satisfactorily in the case of pneumonia. For, while the outdoor class of occupations has a rate of 181.5, the Industrial class is no higher (181.2), the Professional class is but little higher (187.1), and the Mercantile class is much lower (167.0). The Laboring and Servant class, however, has an enormously higher rate, 313.2. Table VI will indicate that this class is numerous enough to counterbalance with their high rate the somewhat low rate of the Mercantile class and to give the city the preponderance noted before. Farmers have a higher death-rate from respiratory diseases than the average of the outdoor class, their rate being 198. Indeed, of the fifty occupations with rates given, only eighteen had higher rates, while thirty-one had lower rates. These eighteen that are higher, however, are enough higher to not only counterbalance these thirty-one, but to make the city death-rate to males from respiratory diseases 156.6 higher than the country rate and 137.8 higher for pneumonia alone (See Table IV, cols. 1 and 3).*

TABLE VI.

NUMBERS OF MALES IN CLASSES OF OCCUPATIONS.
(*Registration States.*)

Agricultural	955,000
Labor and Servant	860,000
Professional	215,000
Mercantile	1,305,000
Industrial	1,899,000

Compiled from Census 1900, Occupations, Table 33.

In view of the fact that women have a much lower death-rate from respiratory diseases than men in most of the occupations where they share the same conditions, and considering that the age composition of the sexes in these occupations has but comparatively little effect, it must be concluded that men are more prone than women to these diseases from lack of constitutional vigor. Whether this lack of vigor results from an

* This is not *wholly* true. The deaths from pneumonia, etc., among males not in occupations probably has some effect.

inborn tendency or from the greater stress of masculine activity in both a business and a social sense cannot be answered here. The fact that women have a higher death-rate from these diseases in the city than they have in the country leads to an inference that the oft-mentioned artificiality, hustle and dash, and nervous strain of city life do have their weakening effect. And it may be that the greater strain, the more general exposure, and the more frequent dissipation of men in cities turn down ever so slightly the flame of their bodily vigor, a conjecture strengthened by the city preponderances, small though they be, in nervous diseases, suicide, venereal disorders, and alcoholism, so that the small degree of vitality which so often means the difference between life and death is wanting when a virulent malady like pneumonia assails. Again, it may be that Willcox is correct in his inference, previously mentioned, that women have greater constitutional resistance to disease. By some it is urged that the larger head of the male child weakens him at birth, and, though his rougher life in youth may bring him greater physical strength, it never restores the lost constitutional strength. The greater death-rate among male infants who share precisely the same conditions with female infants seems almost conclusive evidence that men begin life with a far greater susceptibility to bodily ailment than women.

To recapitulate the conclusions which have been suggested, it seems that a general deficiency of organic vigor in males (from whatever causes) results in a high male excess of mortality from pneumonia in cities; that, whether or not this deficiency in organic vigor lies at the basis of the much greater excess from consumption, city conditions attending indoor labor have a profound effect. These two diseases are of such prevalence as to bring about an excess of male over female mortality, generally higher in cities than in rural sections. This excess is roughly in proportion to the amount of city life, though it is affected by geographical environment.

THE USE AND MISUSE OF STATISTICS IN SOCIAL WORK.*

By Kate Holladay Claghorn.

The general theory underlying the use of the statistical method in social work is so plausible and attractive that few to-day would venture seriously to attack it. That every social condition is due to some cause or causes, that social remedies depend for their effectiveness on knowledge of causes, that this knowledge involves more or less investigation and examination are almost self-evident propositions, stated in this general way, and lead naturally to the employment of the statistical method as a form of research especially applicable where large numbers are to be dealt with, as in the case of social groups.

And so it happens that every phase of the growing interest in social conditions and social betterment is manifesting itself in the endeavor to produce its own appropriate form of social statistics.

Every matter on which legislation affecting social conditions is desired (and these are growing in number and extent day by day) is first referred for investigation, as a matter of course, to some committee or commission which, after laboring from six months to two years, produces its own bulky quota of columns and tables to be stacked away upon library shelves.

The official censuses, State and Federal, originally intended to be mere enumerations of the population, include, year by year, a wider range of facts bearing on social conditions.

Our great organizations of various kinds, public and private, dealing with the social group in its various subdivisions, as dependents, delinquents, defectives, and so on, are keeping more and more complete and careful records, to show not merely

* Read before the National Conference of Charities and Correction, Richmond, 1908.

administration efficiency, but also such facts as are thought likely to be of value in throwing light on the special problem involved in their work or even upon those of a more general nature.

And, finally, every settlement worker, every college boy and girl, filled with enthusiasm for "research" and "statistics," is roaming up and down the land, with open note-book and freshly sharpened pencil, to glean such precious spears of statistical fact as may have been passed over in the lumbering progress of the official machinery.

But, in this enthusiastic advance upon the shining fields of social research, how much have we looked behind, to note the value of the crop we have been gathering?

In some of the older lines of statistical inquiry the process of criticism has followed well after the progress of growth. In the methods of census investigations, in records of institutions, improvements are constantly being made that are constantly adding to the reliability and usefulness of the statistical results.

But outside of these boundaries, among the host of newcomers into the statistical field with a fresh idea for a statistical investigation for every day in the year, it seems as if the preoccupation with each successive new scheme prevents any critical examination of those already brought to completion. These inquirers irresistibly remind one of fresh-air children on an outing, so entranced by the new riches before them that they grasp handful after handful, flowers and weeds together, only to drop them unregarded at the enticement of the next waving tuft of brightness.

There is, in particular, one branch of social inquiry in which there is especial activity at the present time and in which it seems there has been especially little taking account of what is really accomplished, and that is the investigation of the circumstances of the lives of the poor in their homes.

A favorite variety of this sort of investigation is that which concerns itself with the standards of living of families, as shown by the items of family income and expenditure or the family

budget. The difficulties of this kind of inquiry seem to be fairly well recognized in theory, but with apparently little effect in restricting the output in practice.

Every one to whom it would occur to make an attempt at statistical investigation at all is supposed to understand, as the very first principles of his work, that, in order to secure anything that may properly be termed "statistics," the matter dealt with must be capable of expression in quantitative terms, must consist of units that can be distinguished as like and unlike on some objective and verifiable basis, and that can be added, subtracted, and otherwise compared numerically. In the second place, information as to these quantities and relations must be accessible. In the third place, a sufficient amount of information must be gained to eliminate individual variations in the subject studied and errors of observation on the part of the investigator.

In social inquiry, generally, as compared with most other lines of research in which the statistical method is used, there is especial difficulty in meeting not merely one or two of these conditions, which might be counterbalanced by especially thorough compliance with the remaining one, but in meeting any and all of the three, owing to the number, obscurity, and complexity of the elements involved.

And this is especially the case in investigations of standard of living. Any one who has been behind the scenes of one of these investigations, and knows how the information is obtained, must indeed feel a sense of wonderment at its imposing array of columns, percentages, and averages which look so positive and convincing on the printed page.

In the first place, merely in arranging the concrete elements of the problem, the investigator has no end of difficulty in deciding upon the "units" that are to be counted. They must be distinct, they must always have the same meaning in the same investigation, and they must be significant. It is necessary to reduce all sorts and kinds of commodities to some common basis of kind and quality and price. The concrete articles of food must be divided into general classes and dis-

tributed by periods of consumption. Bare amounts paid for rental tell little unless something can be known of the accommodation secured. Clothing must be distributed by kinds and by periods of service,—a very difficult matter. The purchasing power of money ought to be taken into account, though it usually is not.

At last the schedule is planned, including many items the investigator has no direct or special use for at the time, but that he thinks are "interesting" and likely to throw unexpected light on the social problem when gathered, and now he goes forth to collect his information.

Difficulty number two is promptly met with,—that of the possibility of access to the information desired. He cannot, like the astronomer, make first-hand observation of his material which can be verified by other first-hand observers, but is obliged to accept the statements of other people—his very objects of study—who may be, and usually are, of differing degrees of intelligence, of willingness to tell the truth, and of differing personal bias which will lead some to understate some things and others to overstate them, and *vice versa*. They, in turn, are not giving information entirely at first hand, but must depend, more or less, upon memory for matters that puzzle anybody to recall definitely. And, finally, the investigator has to translate their concrete contributions of items into his "units," and present them in such shape and semblance of order as to afford ground for some definite conclusion about something large or small.

Now the third difficulty is encountered. Owing to the first two drawbacks, the scope of a budget investigation ought to be especially large to eliminate errors and give truly representative details. As a matter of fact, it is usually, on account of the time and labor necessary for its preparation, especially small. Data are usually gained for from one hundred to five hundred families,—a range entirely inadequate as a basis for conclusions.

In a recent investigation where it was frankly acknowledged that the number of families investigated (two hundred) was

too small to "furnish conclusive deductions for all workingmen's families," comparison was made with broader investigations to prove the general correctness of the one in question. It might be urged, however, that, where the small investigation is merely confirmed by the large one, it is unnecessary, and, where it is not confirmed, it is too small to allow us to determine whether it is showing new and typical phenomena or simply individual variations due to scarcity of examples.

Where it is found impossible (as it usually is) to make the complete enumeration of facts that would give the whole truth for a class, for workingmen in a given country, for instance, at a given period, or for a given income class, or race, or neighborhood, the investigator has to fall back upon a selection of examples that again works confusion.

In the investigation above referred to,* the two hundred families studied were found in one special neighborhood in New York City, but we are nowhere given definitely the principle of selection whereby, as the preface claims, "they were sorted out by a method as sound as could possibly be chosen," and consequently are unable to judge, except from the word of the investigator, whether the results of the investigation do or do not "give a comparatively true insight into the social, economic, and industrial life of a large class of workingmen's families in any city neighborhood of similar character."

As the actual group of two hundred families chosen included eight nationalities and eleven different sizes of family (ranging from two to twelve) with incomes ranging from $200 to $2,500 and occupations of great variety, including unskilled, skilled, and trading occupations, it is difficult to see how so small a group as a whole can be taken as a type, in all its diversity, of the "working" population as a whole, and still less how, even under proper classification and subdivision, to show the effect of variation in one condition at a time (as variation of income within one race-and size-of-family group, or variations of race within one income-and size-of-family group, or of size of families within the same income-and race-group), any

* More, "Wage-earners' Budgets," New York, 1907.

safe conclusion can be drawn from groups which in many cases are so small as to reduce to individual instances.

In the budget investigation just referred to, some attempt is made to so classify the material presented as to show income and expenditure according to the different elements involved, but we never succeed in getting only one variable at a time. If we have a classification showing variation in income-groups within one size-of-family group, the race elements are mingled indiscriminately, so that we cannot tell whether it is the grade of income reached (which is shown), or the different preponderance of different race elements in different income-groups (which is not shown where size-of-family and income-groups are compared) that is related to the expenditure.

In like manner, in another set of tables, the reader thinks he has arrived at some wise conclusion as to the effect of race traits on expenditure by comparison of different races within the same income-group, when he is suddenly brought to a standstill by observing that the different race-groups show different sizes of family, a circumstance which has its own separate effect on both the amount and the proportion of expenditure.

The inquiry into standards of living recently undertaken by the New York Conference of Charities and Correction avoided some of these defects by confining the investigation as nearly as possible to families of approximately the same size (which might be considered as the average type,—*e.g.*, father, mother, and three children), and within a small range of income so selected as to bring the families within the lower levels of what was assumed to be "normal" subsistence.

But this investigation succeeded in securing for detailed study only two hundred and thirty schedules, covering three income classes and eight race-groups.

Realizing the difficulties of the undertaking, the cautious investigator of budgets will disclaim any attempt at elaborate generalization, and will even, with studied modesty, claim to make none, offering his study as merely a bit of social history to be used by some one else who may find it helpful.

But it is interesting to see that these very investigators

cannot, after all, refrain from generalization; and some of the attempts at interpretation are rather amusing. To take one more instance from More's "Workingman's Budgets," the deduction is made in the final summary that "thrift seems to be most marked in nations in which the preponderance of the income is from the husband," on the basis of one table giving percentage of income derived from the husband and another giving the average surplus in families where there was a surplus shown, both by nationalities.

It occurred to the present writer that the amount of income per person for the families of different races might have something to do with it, too. For instance, Norwegians stood at the head of the list as to amount of surplus and also per cent. of income from husbands. But the group, as a whole, consisted of four families of an average size of 3.5 and an average income of $1,171.75. Such families ought to show a surplus as compared with a group where the average income is $850 and the average size of family 6.0. It might be objected that these very facts are closely related to the percentage of income from the husband, this growing naturally less as one goes down in the scale of prosperity.

To test this and to see also if the generalization was justified, let us arrange the race-groups in the order, respectively, of average income per person, of average surplus where a surplus existed, and of percentage of income from the husband, also giving the number of families in each group, to indicate the weight to be attributed to the facts they show, on the basis of the tables given in the report.

No. of families.	*Order according to average income per person.*	*Order according to average surplus.*	*Order according to percentage of income from husband.*
4	Norway and Sweden.	Norway and Sweden.	Norway and Sweden.
17	Germany.	Germany.	Switzerland.
2	Switzerland.	United States.	Austria.
15	England.	Italy.	France.
105	United States.	England.	United States.
4	France.	Switzerland.	England.
35	Ireland.	Ireland.	Italy.
15	Italy.	France.	Germany.
1	Austria.	—	Ireland.
1	Cuba.	—	Scotland.
1	Scotland.	—	Cuba.

Comparison of the middle column with the right and left hand columns, respectively, will indicate which generalization was the better founded. It should be recalled that irregularity in the correspondence between order according to average income and order according to surplus may be allowed, as indicating thrift as a purely race trait, aside from income; and the chief irregularities are explicable on that basis, notably for Italy, which has a race reputation for thrift.

In the right-hand pair of columns, however, the hypothesis on which they are founded leaves no room for irregularity in order. As a matter of fact, the correspondence fails after the very first item. Omitting race-groups where the number of families is less than four helps matters somewhat; but even then the correspondence is not close, failing notably for the Germans and French.

But, after all, what is the value of these studies without some generalization? What is looked for in these inquiries into standards of living is something beyond mere bits of social history. The chief inducement for taking up social research is to get some light on social causation or, at least, social tendency; and, in particular, circumstances of life should be related to the well-being of the family. It is not enough to get bare items of income and expenditure. We want to translate them into terms of well-being. This task may be approached in various ways.

The mere fact of survival on a given income is a test of the minimum degree of well-being, or, rather, one should say, of a certain degree; for it may be questioned whether those persons who are actually wiped out by death are of as much concern to society at large as those who drag their lives along through various stages of physical and moral disability.

That a family can barely survive on $500 a year can be learned in a simpler fashion than by a budget inquiry; what we really want to know is what grade of well-being that amount can secure, and under what conditions.

Certain approaches to this problem may be made statistically. For instance, we can reduce the amount of money spent

for food into its main kinds, with the amount of each. Then we can, by analysis, determine the general nutritive value of this food per person, per day.

This additional step was wisely taken in the investigation by the New York Conference. But they were unable to determine the amount actually consumed, which would be the next stage of approach to the question of well-being. This, of course, could be determined statistically, though it would not be easy to do so.

But for the next stage we should know what effectiveness is given to food by its preparation, which depends upon different degrees of ability in the housewife; then how the individual members are able to make use of it, which depends upon various idiosyncrasies, involving the uncalculated forces of heredity as shown in race differences, inherited constitution, etc.; and, finally, the degree of well-being reached by its use.

To these questions the statistical method to date does not give reliable answers, and perhaps never will; but the want of them vitiates the whole process of budget investigation to a great degree.

The skill of the housewife, which no way has been found as yet to measure statistically, is as important an element in the problem as any of those that can be so measured. And this is true not merely in the preparation of food, but in the direction of all expenditure. How are we to get track of this? Most investigators agree on the great importance to be ascribed to this element, but can only give information about it in general terms. It does little good to be told (as in one instance) that "what is done with the weekly income and the amount of comfort it yields depends almost entirely upon her [the housewife's] character and ability," when the statistical tables from which inferences are to be drawn are made up entirely without classification of this most important variable, and when we are unable to deduce it from the items themselves. For it is obviously incorrect to assume that good management is proved in families in low income grades if they survive, or in higher grades, if they show a surplus of income over expenditure at the end of the year.

A more sensible test would be that of the grade of well-being of the family, which is also wanted for its own sake, as the final end of a budget investigation. But that, too, is difficult, if not impossible, to get statistically. It is not necessary to adduce elaborate proof of this point. Let any one who doubts the difficulty set to work to draw up a schedule to show degrees of physical well-being, and then consider how the information is to be secured and how accurate it is likely to be.

Or, to save labor, let him consult the Report of the New York Committee on Physical Welfare of School-children,* which did attempt to connect circumstances of life with well-being by the statistical method, and see what results are obtained.

That committee, reversing the process of the budget investigator, took a grade of well-being as its starting-point, and attempted to trace back to the circumstances of home life which might have caused it. Fourteen hundred school-children in the kindergarten and first two grammar grades, of different nationalities, from schools in all parts of the city, who were found by the school physicians to have defects of vision, hearing, breathing, teeth, and nourishment, were taken as the basis of the investigation, which consisted of inquiry into their home conditions "in order," the report states, "to ascertain whether their need arises from deficient income or from other causes."

At the very outset the test of "well-being" is seen to be a most uncertain one. While, at first glance, the idea that two-thirds of the city's school-children are physically "defective" is a startling one, it depends, after all, upon the kind and degree of the defects how serious the condition is. The kinds of defects included in the class investigated by the committee are precisely those in which the degree of importance may vary most widely and is likely to be differently judged by different examiners.

The main items of defect shown in the fourteen hundred children studied were malnutrition, enlarged glands, eye defects, nose defects, throat defects. The largest single item was for "bad teeth," which was present in 74.9 per cent. of the

* Report on Physical Welfare of School-children. Pub. Am. Stat. Assn., June, 1907.

fourteen hundred children. This is obviously a defect as to the significance of which there may be great difference of opinion. Those who hold that it is of especial importance in its bearing on malnutrition and other defects will not get much support from the relation of defects shown in this report, as, in the 145 cases of malnutrition found among the 1,400 children (only 10.4 of all), only 73.1 were reported as having bad teeth; while the remainder not afflicted with malnutrition showed 75.1 with bad teeth. In fact, 291 of the children (21 per cent. of the 1,400) had no defects *but* bad teeth. Suppose we decided that "bad teeth," unaccompanied by any other defect, was not a very alarming condition, and subtracted the number showing that defect only from the defective class. Doing this and assuming that the 1,400 children with defects showed the ratio to children without defects given by the school authorities as 2 to 1, it is found that the proportion of "defective" children in the school population would drop to 53 per cent., which is quite a different story from $66\frac{2}{3}$ per cent.

In like manner the other items could be varied and the percentages changed. That there is a grave possibility of change in degree of defects, due to differences in examination, is more than hinted at in the report, where a comparison is made between the percentage of defects shown in the first examination of 1,400 children in October and in a re-examination of 990 of the same children in the following March and April. The remaining 410 had moved away,—a selection of sufficiently random character not to affect the proportions, which were as follows:—

	First examination, per cent. of 1,400 *children.*	*Second examination, per cent. of* 990 *children.*
Malnutrition	10.4	12.9
Enlarged glands	45.5	70.2
Bad teeth	74.9	79.2
Eye defects	14.9	17.4
Nose defects	28.2	47.1
Throat defects	30.9	45.6

"Almost to a child," says the report, "conditions were found to be more serious in April than were recorded in the preceding October, November, and December." But "no one knows,"

the report continues, "whether these changes are due to actual deterioration or to the probability that a school physician, re-examining specially selected children, would be more thorough than when making original examinations. No allusion is here made to seasonal change, but this also would have to be taken into account."

Whatever the reason, it would seem that percentages which could vary so widely as from 45 to 70 for "enlarged glands," from 28 to 47 for nose defects, and from 30 to 45 for throat defects in six months, would be of little value either to show prevalence of defects or to make a basis for showing their causes.

As a matter of fact, the results of this research were mostly negative, as practically admitted by the committee themselves, due, however, not merely to the indeterminate character of the class taken for investigation, but to serious defects in method, which could, it seems, quite well have been avoided.

In the investigation of home conditions a large number of questions was asked, covering race, time of residence in New York State, in the city, income, occupation, members of the family working, kind and number of rooms occupied, rent paid, character of meals eaten by the child in question and his hours of sleep, disease and death record of the family, with record of circumstances accompanying the birth and infancy of the child, and many other matters.

The material thus obtained was embodied in thirty-eight tables of great length and detail, in comment upon nearly every one of which, one after another, the report itself states that the particular circumstance there tabulated did not seem to account for the defects.

This is not surprising when it is seen that not one of these tables gives comparisons with the same set of conditions for the school-child without defects, to see whether the circumstances shown are in a differing proportion for the defective child, and consequently may be presumed to have some relation to the defects.

In only four of the thirty-eight tables are the different defects tabulated separately. Of the remaining thirty-four,

twenty-two give classifications of circumstances of home life by race, nine by income, and three by both race and income for the class of defectives as a whole.

If this were a study of race traits and habits or of variations in manner of life characteristic of various income-groups, the tables would be to the purpose. But, after uniting heterogeneous defects in one arbitrary class and failing to give any standard of comparison with the normal child, in what possible way can the diseases and mortality of fathers and mothers, number of children born, mortality and diseases of children, housing conditions, income, etc., be shown to have relation to the defects given?

The nearest approach to a positive result is obtained from a couple of tables where malnutrition is tabulated separately and compared with the other defects, for several circumstances, income among them. Here we have some indication of circumstances that are presumably related to this one defect; but how much more light would have been thrown on even this one question, had the basis of comparison been, not children with other defects, but the average child, or, even more significant, the child without defects.

This lack could have been easily supplied for all the tables, and the value of the report increased tenfold, by making a parallel investigation of home conditions for seven hundred families in which the school-children showed no defects; that is, the remaining one-third, which is said to be the proportion of those without defects among New York City school-children.

Such an investigation, after all, is but a crude method of finding the causes of physical defects. Each defect may be the result of one of many coexisting circumstances or of any variety of combination of these circumstances; and each may in its turn interact with any of the others in a way that requires the utmost patience and nicety of physiological research to disentangle, taking up one defect at a time and one supposed cause at a time. Perhaps as long as this is the case it would be advisable for the lay investigator to leave such questions for the medical profession to solve.

Are the results gained in such inquiries undertaken under such difficulties as these worth the time and money spent on them? The most that budget investigations have determined, even if we assume them to be accurate, is that *some* people *can* live on a certain amount of money at a given time and place; but they seldom afford a guide as to what other people *can* or *ought* to do. The budget inquiry of the New York Conference was undertaken with the eminently practical purpose of throwing some light on the question of adequate relief, by showing how much money we ought to assume would be sufficient for a family to live on in a fairly normal way.

The conclusion drawn, however, is from an average based upon different race-groups, each of which presumably differs from the others in respect to the fundamental necessaries of normal living. For this purpose, indeed, the statistical method is especially weak, for it is a characteristic of the average not to fit individual cases.

The discrepancies shown in the different estimates that have been made of the minimum living wage indicate the difficulties of getting at the standard of living by means of statistics. And this, quite leaving out of the question the variation in purchasing power of money between one period and another and one locality and another, which of itself introduces an element of uncertainty so great that as a guide to practice a budget investigation is out of date about as soon as completed, and inapplicable besides to other communities than that for which it was taken.

Are there, besides the lack of results, certain possibilities of actual harm in the present wholesale recourse to this form of inquiry? It always does harm to give out misinformation in the guise of information, and matter presented in the form of long columns of figures has in itself a convincing look. People in general will not criticise or even read statistical matter, but they are, notwithstanding the numerous jokes about statisticians and liars, tremendously impressed by it. This is what makes the irresistible tendency of the investigator to generalize on insufficient basis so dangerous.

The general public will, without question, swallow almost any positive statement, accompanied by figures, without stopping for one moment to see whether there is any connection between the two or not. This is particularly mischievous when the public thus impressed is some legislative body, for we know that even they do not always give the "statistics" submitted to them a thorough critical examination, and that they, to a greater extent than the general public, are able to carry out their mistaken ideas in action which affects the entire community.

There is another possibility of harm of which it is perhaps old-fashioned to speak, and that is the effect on the families themselves of having their lives and intimate family circumstances investigated. These inquiries are in the main carried on, not merely from pure scientific interest, but for some purpose of social betterment; and it is not so very long ago that persons with such purposes were warned over and over again by their guides and advisers of the dangers of invading the privacy of the home and the necessity of keeping strictly within the limits of confidence, kindness, and personal relation in the work of investigation, which was to be tolerated only in so far as it was a necessary means for securing the benefit of the family itself.

The newer tendency in social work to regard outer circumstances of environment—such as food, housing, etc.—as the mainly determining factors in social conditions is for the time leading us to overlook the no less important side,—that of individual character, the force that reacts against environment and develops by laws of its own from within as well as those laid upon it from outside.

If, then, in our attempt to get at outer conditions we hurt or injure this delicate root of the inner life, are we not doing a very great and real harm? Self-respect is the foundation of character, and self-respect is accompanied by an instinct for privacy, which we should not only refrain from breaking down where it exists, but should try our best to build up where it does not exist.

If we, as housing reformers, insist upon separate entrances to bedrooms, so that different members of the same family shall not intrude on each other, shall we, as statisticians and strangers, ourselves break open those doors and with pencil and note-book in hand extract the most intimate details of the family life for public presentation?

The old-fashioned treatises on ethics taught us that the most immoral procedure possible toward our fellow-man was to treat him as a "thing," not a person. It would be very unfortunate, it seems to me, if, in our zeal for investigation, we conveyed the impression to the poor that they were "things" to be weighed, measured, and ticketed.

They have enough to bear. Let us at least spare them that, except where we are very sure that some very great benefit to them and to society at large will result from it. If the statistical mind needs exercise, it can easily get it in some more innocent way; and, if our college professors must provide their students with so-called "laboratory work" in social research, let it be among the well-to-do whose lives also might furnish statistics of an interesting nature and who are now showing such an interest in social investigation that they ought to be pleased to furnish the material for investigation as well as the funds.

To improve the conditions at present prevailing in social research, several measures can be taken.

In the first place, we should break off the habit of referring every question to statistical investigation as a matter of course. We should in the first place determine whether it is not sufficiently plain in its obvious aspects, so as to avoid resorting to a laborious process of proof of something quite well known before. Then it should be made quite certain that the matter in question is susceptible of statistical treatment. Then, whether the results will be worth the time and money spent in getting them. The student of social matters may ask questions enough in half a day, all of more or less interest and all abstractly capable of solution by statistics, but of such a nature as to keep an army of investigators busy for years.

If a question is handed over for statistical treatment, sufficient time and money should be allowed to make the results worth while. One great difficulty at present with statistical studies is that so many are of such small scope and not comparable with each other. Investigators seem to think that, by acknowledging that the extent of their investigations is inadequate, they have thereby obviated the difficulty. But they have not, so long as they continue to publish these investigations, nevertheless, and to draw conclusions from them.

What would perhaps be as wholesome a remedy as any for inadequate statistical work would be for those undertaking it to cultivate the old-fashioned moral virtue of self-denial. It is to be suspected that many an investigation is published just because the investigator has got the material together, and, although he knows it is inadequate, dislikes to waste it, or because some committee has paid him to produce results, and he wants them to feel that they are getting their money's worth. This idea itself should be combatted not merely for the sake of getting better statistics, but for the education of the public. It has been recognized as the duty of the statistician to urge the value and necessity of adequate and proper statistics; but it is quite as important and necessary a task—perhaps more so, at the present juncture—to stand firmly against the production of what is useless and misleading, and to make plain that the money appropriated for an investigation is better spent when the results are withheld if they prove to be negative or valueless than if they are "saved" by being published.

It is obvious that there is need of a better technique in the presentation of social statistics. There is no excuse for slovenly tables that even the expert must take a week to study out and that the ordinary reader can make nothing of except what the investigator gives him in his "deductions." This is entirely unnecessary. In almost every matter dealt with in social research the material can be so arranged and explained that the average man may and should find it illuminating and instructive.

One reason for this lack of clearness in presentation is the

fact that so many untrained persons are engaged in this work. When an investigation is undertaken, the workers are gathered from hither and yon, as best they may be, some with one qualification, some with another, including some who seem to think it an interesting trait that they "don't like mathematics" and that they "always did hate to add."

It is, of course, possible to make use of untrained assistants under competent supervision; but I regret to say that even the directors of investigations are not always as careful in their own statistical methods as they might be, and do not always give really conscientious, careful supervision to their workers. Many an investigation is carried on and the results published under the guarantee of some statistical authority of weight or some committee of experts, in which the inexperienced and often untrained investigator is left very much to his own devices to form his own plan, frame his own tables, and draw his own conclusions without that careful, critical examination on the part of his chief which is his due.

Finally there is need for the development of new technical methods suitable for social research. The mathematical experts, with their elaborate formulæ, are as a rule not sufficiently interested in social questions, nor do the methods worked out for other sciences apply to most of the questions the social investigator wants to study.

The social scientist, on the other hand, is apt to be deficient in the mathematical sense as to where numbers apply and where they do not. What is needed is a new variety of expert, one who has at the same time the sense of numbers and the sense of social values. Let us hope that, by dint of each one doing his little best at the task of improving methods, a fitting type of method and of investigator will finally appear.

STRIKE STATISTICS.

By Ira Cross.

Since its establishment the United States Bureau of Labor has issued four reports dealing exclusively with the statistics of strikes and lockouts.* The data which they contain have been interpreted by many writers in a number of different ways and with varying results. Whenever a writer upon the labor problem has wanted to say something about strikes and lockouts, it has been customary for him to take up one of the above volumes, glance through it hastily, pick out a few general averages for the period covered by the investigation, and then publish those averages as accurate conclusions, good for all times, past, present, and future, and for the whole field of strikes and lockouts. Averages covering one period of years, *e.g.*, the average number of establishments per strike for 1881–95, have been compared with those of another, *e.g.*, the average number of establishments per strike for 1881–1900. The worthlessness of such a use of statistical data is too evident to warrant argument. Another method frequently followed has been to divide the tables into periods of four or five years, and then to compare the results of one period with those of another. Thus it has been claimed that the statistics contained in Table I, in which the number of strikes is grouped into five-year periods, show that strikes in the United States remained practically stationary from 1886 to 1895 and that

TABLE I.

Number of Strikes by Five-year Periods.

1881–85	2639	1891–95	7169
1886–90	7029	1896–1900	6951

* Third Annual Report, Jan. 1, 1881–Dec. 31, 1886 . . . . . 6 years.
Tenth Annual Report, Jan. 1, 1887–June 30, 1894 . . . . . 7½ years.
Sixteenth Annual Report, July 1, 1894–Dec. 31, 1900 . . . . . 6½ years.
Twenty-first Annual Report, Jan. 1, 1901–Dec. 31, 1905 . . . . . 5 years.

from 1896 to 1900 they actually decreased, although during the same period, 1886–1900, population and the number of wage-earners in the manufacturing industries had greatly increased. Professor T. S. Adams, in an excellent chapter on Strikes,* follows this method, and states that, "since 1886 at least, strikes have not been increasing as fast as the population of the country. . . . Thus between 1890 and 1900 the general population increased 20.7 per cent., . . . and the wage-earners in manufacturing industries 25.1 per cent. On the other hand there were more strikes in 1890 than in 1900, and the average annual number of strikes in the five years 1886–90 was 1406 as compared with 1390 for the years 1896–1900. . . . Taking one year with another, there is no reason to distrust the plain testimony of the figures that strikes are not increasing as rapidly as the industrial population." But, on the other

TABLE II.

NUMBER OF STRIKES BY FOUR-YEAR PERIODS.

1881–84	1846	1889–92	5923
1885–88	4419	1893–96	4895
1897–1900	5710		

hand, if the statistics in Table I are grouped into four-year periods, as in Table II, a decided increase is to be noted in the last period, 1897–1900. Again, if the statistics covering the five years from 1901 to 1905 be added to Table I, as in Table

TABLE III.

NUMBER OF STRIKES BY FIVE-YEAR PERIODS.

1881–85	2639	1891–95	7169
1886–90	7029	1896–1900	6951
1901–1905	13,964		

III, we note that the number of strikes increased to 13,964 as compared with but 6,951 for the period 1896–1900. Thus we see that the number of strikes had practically doubled, although during the same period the wage-earners in the manufacturing industries had increased but 16 per cent.† If we compare the

* Adams and Sumner, "Labor Problems," pp. 179–181.

† Special Report on Manufactures, Bureau of the Census, 1905, Part I, p. lxxi.

actual number of strikes by individual years, we find that there were more strikes in 1905 than in 1900. Without further comment it is evident that such statistical methods are practically worthless.

Mr. G. G. Huebner has shown the fallacy of such methods in an interesting monograph, "The Statistical Aspect of the Strike," * in which he has analyzed the data contained in the Sixteenth Annual (1900) Report of the United States Commissioner of Labor. In part he points out, as Bowley † had previously shown regarding the statistics of exports and imports, that the results obtained by grouping data by periods depend "upon the particular number of years adopted as the basis of the averages," and concludes that "no method which depends upon the particular period chosen as the basis of the averages can be adopted, as there is no more logic in adopting one period than another." ‡ Thus, as shown above, if the strike statistics for the period 1881–1900 are grouped into four-year averages, the number of strikes per period increases, but, if a five-year average is used, the number of strikes per period decreases. In order to avoid this fallacy and at the same time to prevent the great fluctuations in the curves which would follow, were the absolute statistics of strikes plotted by years, Huebner adopts the method known as "smoothing," and uses a five-year average as the basis of his work. This results in a curve which avoids extreme fluctuations and at the same time indicates the general tendency in the development of strikes.

After a detailed analysis of the data at hand, Huebner concludes that for the period 1881–1900 statistics show that absolutely strikes were increasing rapidly, although relatively they were increasing slowly. As regards the effect of tradesunionism upon strikes, he affirms that on the "basis of the number of strikes the effect is to check the increase as tradesunionism becomes older and more experienced; on the basis of the number of employees and establishments affected by strikes, the

* Twelfth Biennial Report, Wisconsin Labor Commissioner, Part II.

† Bowley, "Elements of Statistics." ‡ Huebner, p. 82.

effect is to accelerate the increase. The character of the strike is being changed by the union so that it is becoming of increasingly wide-spread importance to both parties and to the community at large. . . . Union strikes are not becoming more successful even though unionism is being more and more thoroughly organized. . . . Furthermore tradesunionism affects the causes of strikes by reducing the importance of the purely standard causes [wages and hours] and increasing the importance of tradesunionism [closed shop, union rules, etc.] as a cause of strikes."

Since the publication of Huebner's results, the Twenty-first Annual Report of the United States Commissioner of Labor has been issued. It will be the object of this paper to examine the data contained in this volume, and by following Huebner's methods to see how nearly later statistics tend to confirm his conclusions as well as those of other writers.

In the tables and charts which follow, all data have been "smoothed" by using five-year averages. In order to get an average for 1882 and 1904 respectively, statistics for 1882, 1883, and 1884, and for 1903, 1904, and 1905, have been smoothed by three-year averages. Since the use of a three-year average in beginning and completing a five-year average curve might be seriously questioned, no importance has been given to the averages for 1882 and 1904 in arriving at any of the conclusions contained in this paper.

Before entering upon a discussion relative to the increase or decrease in the number of strikes during the years 1881–1905, it is advisable to consider the changes in the nature of the causes of these disturbances. The report of the Commissioner groups the causes of strikes into the following fourteen general divisions, with a subdivision under each, the latter giving the number of strikes in which each cause was but a partial or contributing factor:—

1. For increase of wages.
2. Against reduction of wages.
3. For reduction of hours.

4. Against increase of hours.
5. Concerning recognition of union and union rules.
6. Concerning employment of certain persons (not involving union rules).
7. Concerning employees working out of regular occupation.
8. Concerning overtime work and pay.
9. Concerning method and time of payment.
10. Concerning Saturday part holiday.
11. Concerning docking, fines, and charges.
12. Concerning working conditions and rules (not involving union rules).
13. In sympathy with strikers and employees locked out elsewhere.
14. Other causes (not above specified).

Only those strikes ordered because of (1) wages and hours, (2) union rules and recognition of the union, and (3) sympathy, need concern us here, because of the fact that the number of strikes called for reasons other than these fluctuated but little.

In order to obtain statistics of strikes that were declared because of wages and hours, the number of strikes called "For an increase of wages," "Against a reduction of wages," "For a decrease of hours" and "Against an increase of hours," have been added to those in which wages and hours were "only partial or contributing causes." Under the heading "Union Rules, etc.," have been grouped those strikes declared because of various matters "relative to dealing with union officials and the adoption or enforcement of rules and regulations of unions governing the work of their members, one of the most frequent and important rules being against working with non-union men," *—or the closed shop. To these have been added those in which union rules were only a partial or contributing cause. The phrase "Sympathetic Strikes" needs no explanation. Strikes in which sympathy was only a partial cause have also been added. The results thus obtained are presented in Table IV and Diagram I.

* Twenty-first Annual Report, United States Commissioner of Labor, p. 113.

TABLE IV.

PERCENTAGE OF STRIKES DUE WHOLLY OR PARTIALLY TO CERTAIN CAUSES.

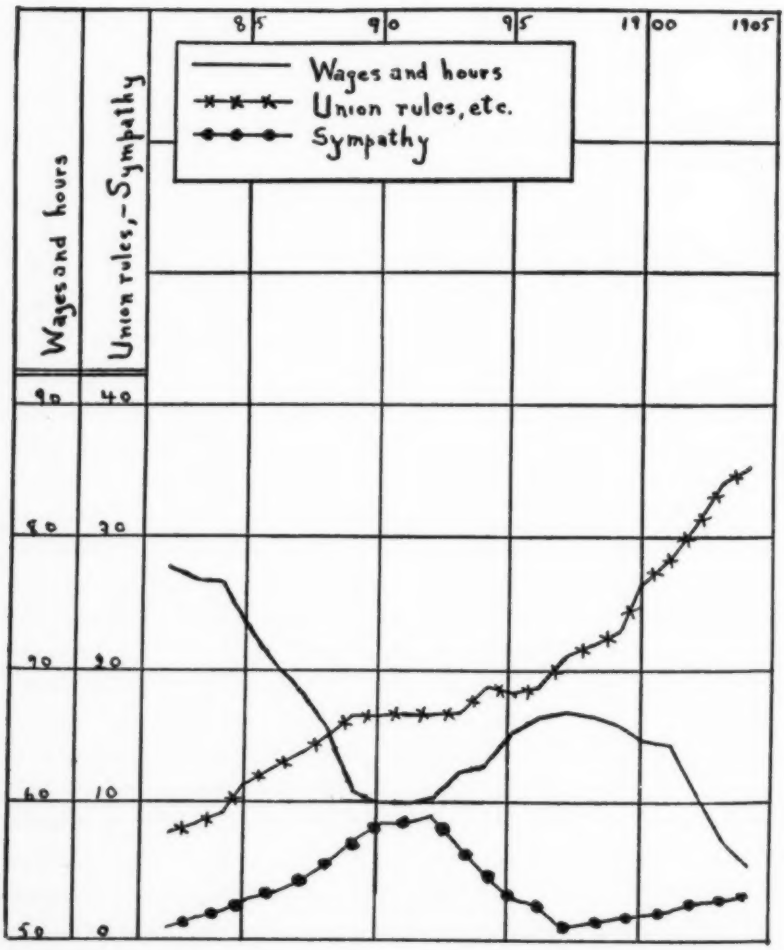
Years.	Wages and hours.		Union rules.		Sympathy.	
	Per cent.	Smoothed.	Per cent.	Smoothed.	Per cent.	Smoothed.
1881	79.0		6.8		0.8	
82	76.9	77.8	6.8	7.7	0.9	0.8
83	77.4	76.5	9.6	8.2	0.6	1.5
84	75.2	76.4	9.6	9.2	2.0	1.9
85	74.3	73.5	8.4	11.5	3.1	2.7
86	78.4	70.4	11.5	12.7	2.9	3.3
87	62.4	68.1	18.5	13.8	4.7	4.1
88	61.8	65.6	15.8	15.3	3.8	5.4
89	63.8	61.0	15.0	16.4	6.1	7.2
1890	61.6	59.9	15.6	16.4	9.9	8.0
91	55.2	60.0	17.4	16.6	11.5	8.2
92	57.3	60.2	18.3	16.4	8.9	8.7
93	62.1	62.1	16.8	16.6	4.5	6.9
94	65.1	63.0	14.1	18.6	8.8	4.7
95	71.1	65.3	16.5	18.1	0.6	3.0
96	59.4	66.4	27.1	18.8	0.6	2.3
97	68.7	66.8	16.2	21.0	0.7	0.8
98	67.5	66.4	20.3	21.9	0.8	1.0
99	67.1	66.0	24.9	22.9	1.5	1.4
1900	69.2	64.7	21.1	26.1	1.5	1.7
01	57.4	64.1	32.1	28.4	2.4	2.1
02	62.2	60.6	32.1	31.2	2.6	2.5
03	64.5	57.1	31.7	34.1	2.4	2.7
04	49.4	55.3	38.9	35.4	3.7	2.9
05	51.8		35.5		2.7	

It is interesting to note (1) the decline in the percentage of strikes called because of hours and wages and (2) the steady increase in the percentage of strikes called because of union rules. The decreasing importance of the one and the increasing importance of the other shows most conclusively that a decided change has taken place in the nature of the demands of the strikers. The Commissioner of Labor comments upon this matter in the following manner: "The percentage of strikes for an increase of wages . . . fluctuated from year to year, but the general tendency was downward. The percentage of strikes against a reduction of wages solely shows a tendency to decrease. The percentage of strikes due to recognition of union and union rules alone was 5.73 in 1881 and fluctuated from year to year, but generally

increased until the highest point, 32.42 per cent., was reached in 1904. That cause in combination with other causes also showed a decided increase during the twenty-five years from 1881 to 1905."* The agitation for the closed shop on the part of the unionist, especially since 1898, has greatly increased the number of strikes coming under this heading.

* Twenty-first Annual Report, United States Commissioner of Labor, p. 65.

DIAGRAM I. CAUSES OF STRIKES.



The slow but steady growth in the number of sympathetic strikes since 1896 is an interesting development. This has been due, no doubt, to an increasing number of strikes against performing work for other establishments in which a strike or lockout was pending or against furnishing material to such establishments.

In the following table the increase in strikes from 1881 to 1905 is shown in various ways. With the exception of 1882 and 1904, where, as previously mentioned, a three-year average is taken, the smoothing is effected by using a five-year average.

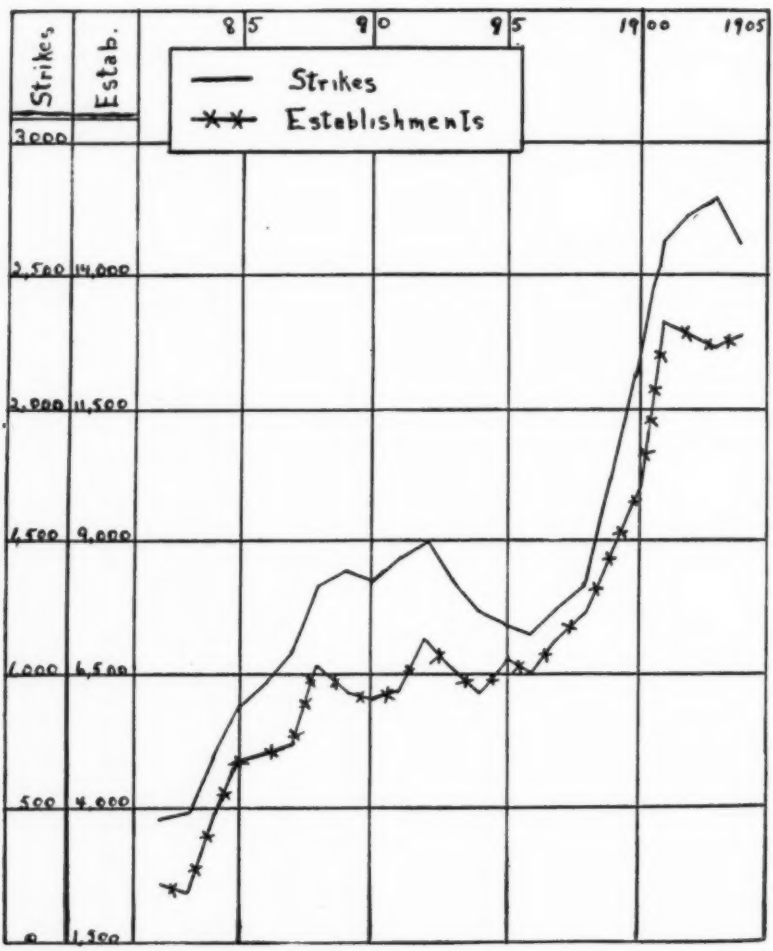
TABLE V.

INCREASE IN NUMBER AND MAGNITUDE OF STRIKES IN THE UNITED STATES, 1881–1905.

Years.	Strikes.		Establishments.		Strikers.		Employees affected.	
	Number.	Smoothed.	Number.	Smoothed.	Number.	Smoothed.	Number.	Smoothed.
			(000 omitted.)	(000 omitted.)	(000 omitted.)	(000 omitted.)	(000 omitted.)	(000 omitted.)
1881 . .	471		2.9		101.1		129.5	
82 . .	454	467	2.1	2.6	120.9	114.7	154.7	144.7
83 . .	478	498	2.8	2.5	122.2	124.0	149.8	164.7
84 . .	443	690	2.4	3.9	117.3	185.2	147.1	240.4
85 . .	645	887	2.3	4.8	158.6	215.6	242.7	285.4
86 . .	1432	972	10.1	5.0	407.2	211.8	508.0	285.1
87 . .	1436	1099	6.6	5.2	272.8	229.3	379.7	305.5
88 . .	906	1336	3.5	6.7	103.2	254.8	147.7	327.4
89 . .	1075	1393	3.8	6.3	205.1	222.4	249.6	285.5
1890 . .	1833	1366	9.4	6.1	285.9	200.5	351.9	251.0
91 . .	1717	1445	8.1	6.3	245.0	218.9	298.9	274.6
92 . .	1298	1500	5.5	7.2	163.5	278.9	206.7	356.8
93 . .	1305	1376	4.6	6.7	195.0	278.9	265.9	364.9
94 . .	1349	1238	8.2	6.1	505.0	266.7	660.4	353.3
95 . .	1215	1194	7.0	6.7	285.7	300.4	392.4	393.7
96 . .	1026	1145	5.5	6.6	183.8	297.8	241.2	390.2
97 . .	1078	1234	8.5	7.2	332.6	258.5	408.4	341.6
98 . .	1056	1347	3.8	7.7	182.1	281.3	249.0	364.2
99 . .	1797	1726	11.3	8.8	308.3	323.8	417.1	424.7
1900 . .	1779	2143	9.2	9.9	399.7	367.9	505.1	474.9
01 . .	2924	2631	10.9	13.2	396.3	437.8	543.4	556.1
02 . .	3162	2733	14.2	13.0	553.1	451.3	659.8	576.1
03 . .	3494	2793	20.2	12.8	531.7	406.7	656.1	519.7
04 . .	2307	2626	10.2	12.9	375.8	361.3	517.2	465.0
05 . .	2077		8.3		176.3		221.7	

The detailed statistics contained in Table V are summarized in Diagrams II and III. Diagram II shows that strikes increased

DIAGRAM II. CHANGES IN NUMBER OF STRIKES AND NUMBER OF ESTABLISHMENTS AFFECTED.



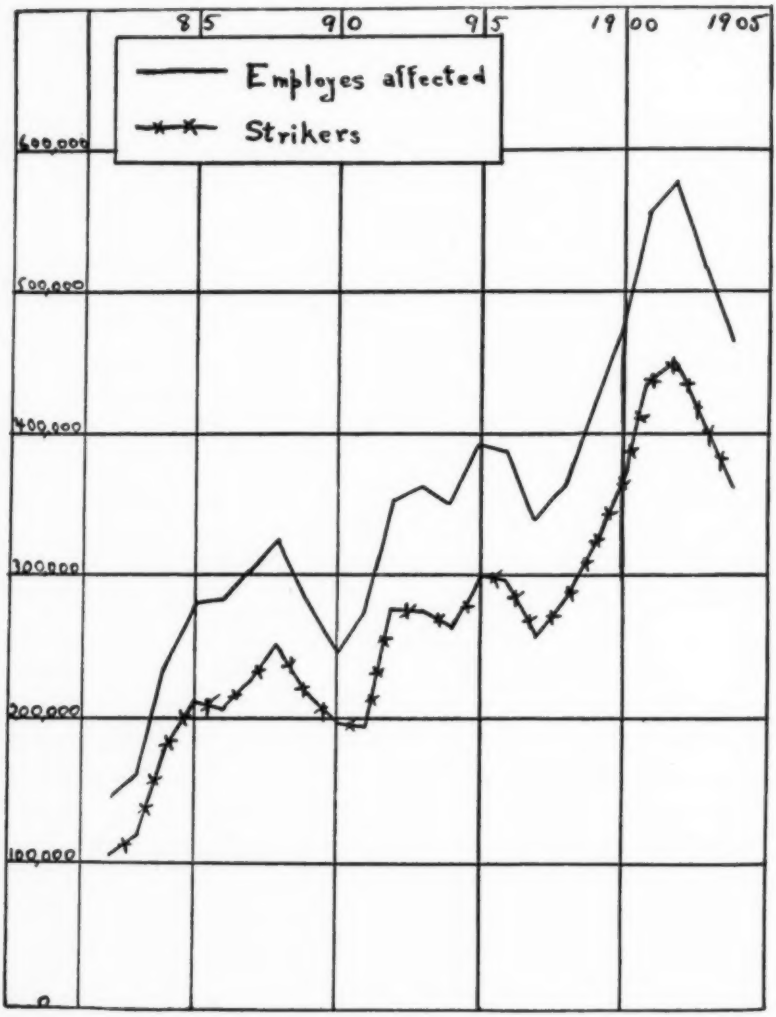
rapidly from 1881 to 1888 and less rapidly from that time until 1893. A slight decrease then followed, but from 1896 to 1904

the increase was very rapid. The number of establishments affected also increased rapidly until 1888, remained practically stationary until 1896, increased rapidly until 1901, and then declined slightly in 1902 and 1903. Diagram III shows that with slight fluctuations the actual number of strikes and the number of employees affected increased until 1902, when a rather marked decrease took place. Thus we may say that, in general, during the twenty-five years under discussion the number of strikes, strikers, establishments, and employees affected increased absolutely at a rapid rate.

But are strikes increasing relatively? The Census Office* estimated that from 1900 to 1905 the population of the United States had increased 8.4 per cent. and that the number of wage-earners in the manufacturing industries had increased 16 per cent. The increase in the number of strikes during the same period (comparing the actual number of strikes in 1900 with those of 1905) was 16.1 per cent., while the number of strikers, establishments, and employees affected in the same two years shows an actual decrease. This would lead some to claim that strikes, although not decreasing relatively in number, were decreasing greatly in importance. But, as pointed out above, nothing can be gained by comparing the statistics of one year with those of another. Results thus obtained depend entirely upon the years chosen. The curves in Diagrams II and III also show a decrease in the number of strikers, establishments, and employees affected in 1902 and 1903. But this fact affords no ground for arguing that such a decrease will continue either actually or relatively. Other decreases are to be noted in the curves extending at times over several years, but such declines have always been followed by a rapid recovery. Therefore, we conclude that there is nothing in the above statistics that would lead us to believe that strikes are decreasing either absolutely or relatively. The general tendency of the curves has always been upward and usually at a rather rapid rate.

* United States Bureau of the Census, Bulletin 71, p. 15.

DIAGRAM III. CHANGES IN NUMBER OF STRIKERS AND IN NUMBER OF EMPLOYEES AFFECTED BY STRIKES.



Much has been said in recent years about the influence of labor organizations on the number of strikes. If we divide the total number of strikes into those ordered by labor organiza-

tions and those not so ordered, we obtain the results shown by Table VI and by Diagram IV.

TABLE VI.

A Comparison of the Strikes of Organized and Unorganized Labor.

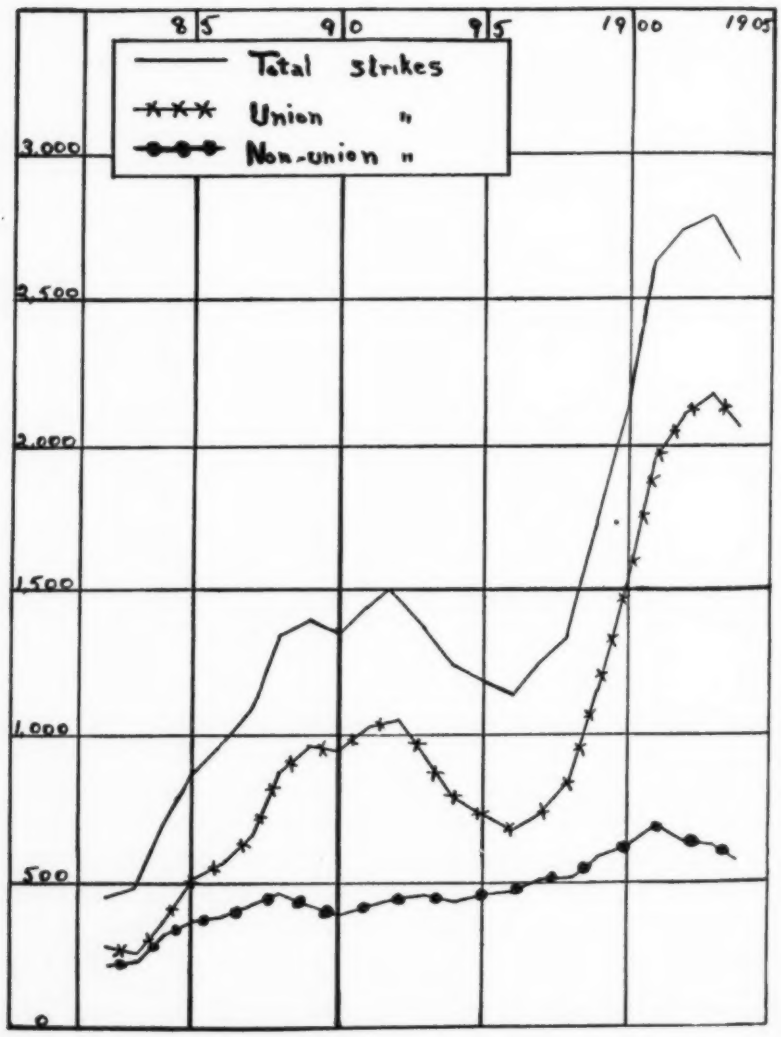
Years.	Ordered by Labor Organizations.			Not ordered by Labor Organizations.		
	Number.	Per cent.	Smoothed.	Number.	Per cent.	Smoothed.
1881	223	47.4		248	52.6	
82	220	48.5	50.8	234	51.5	49.2
83	271	56.7	52.4	207	43.3	47.6
84	240	54.2	53.6	203	45.8	46.4
85	357	55.3	57.2	288	44.7	42.8
86	763	53.3	59.5	669	46.7	40.5
87	952	66.3	62.1	483	33.7	37.9
88	616	68.1	65.3	288	31.9	34.7
89	724	67.3	69.6	351	32.7	30.4
1890	1306	71.3	70.5	525	28.7	29.5
91	1284	74.8	70.7	432	25.2	29.3
92	918	70.7	69.8	380	29.3	30.2
93	906	69.4	66.4	399	30.6	33.6
94	847	62.8	64.4	501	37.2	35.6
95	658	54.2	61.3	555	45.8	38.7
96	662	64.6	59.4	363	35.4	40.5
97	596	55.3	59.3	482	44.7	40.7
98	638	60.4	61.6	418	39.6	38.4
99	1115	62.1	63.8	682	37.9	36.2
1900	1164	65.4	68.4	615	34.6	31.6
01	2218	75.9	72.1	706	24.1	27.9
02	2474	78.2	76.1	688	21.8	23.9
03	2754	78.8	77.9	740	21.2	22.1
04	1895	82.1	78.6	412	17.9	21.4
05	1552	74.7		525	25.3	

In Diagram IV the curve of the non-union strikes shows a slow but continuous tendency to increase, regardless of fluctuations in the other curves. The general upward tendency of union strikes is noticeable throughout despite the evident decrease during the years 1892–96. This decrease has led many writers to claim that tradesunionism tends to discourage strikes during periods of business depression. Adams, in the chapter above referred to, says:* "Compare the number and

* Adams and Sumner, "Labor Problems," p. 185.

results of the two classes of strikes in the industrial depression which began in 1893. The labor organizations, realizing that conditions were not auspicious, steadily restricted the number

DIAGRAM IV. CHANGES IN NUMBERS OF UNION AND NON-UNION STRIKES.



of strikes. . . . Among the 'unorganized' strikes, however, the movement was reversed. As times grew harder and wages fell, the discontent of the unorganized workmen vented itself in an increased number of strikes." . . . It is a question whether or not the restraining influence of tradesunionism upon strikes during "hard times" has not been overestimated. It is the opinion of the writer that the matter of an increase or decrease in the membership of the union is a movement of far greater importance. Thus we know that during times of business prosperity the membership of the unions grows rapidly, and that strikes are of frequent occurrence. During "hard times," however, the reverse is true. Organized labor declines in influence and orders comparatively few strikes, while at the same time the ranks of the unorganized are greatly augmented with a consequent increase in the number of non-union strikes. Arguing from these premises, the writer has been led to believe that a rough parallel can be drawn between the growth or decline of their membership and the number of strikes called by unions.

TABLE VII.

MEMBERSHIP OF THE AMERICAN FEDERATION OF LABOR COMPARED WITH NUMBER OF STRIKES ORDERED BY LABOR ORGANIZATIONS.

Years.	Membership, American Federation of Labor.	Strikes ordered by labor organizations.
1890	199,500	1306
91	199,100	1284
92	228,400	918
93	245,900	906
94	176,300	847
95	207,100	658
96	243,900	662
97	232,200	596
98	254,600	638
99	323,200	1115
1900	504,400	1164
01	725,500	2218
02	928,200	2474
03	1388,500	2754
04	1562,500	1895
05	1434,800	1552

Thus, for example, we know that during the later '80's the Knights of Labor were very active and that the American Federation of Labor was gaining strength. The percentage of union strikes increased greatly during the same period. The business depression of 1893 greatly reduced the membership of these organizations * and the percentage of union strikes decreased. Following the business revival of 1896, the membership grew rapidly, as did also the percentage of strikes called by the unions. Table VII, taken from the reports of the Industrial Commission and from the published proceedings of the annual meetings of the American Federation of Labor, shows the growth in the membership of that organization based upon the number of votes represented by the delegates in attendance at the annual conventions. In commenting upon these statistics, the Industrial Commission says: † "Yet, while not showing even approximately the absolute membership of American unions, these figures give some indication of the direction and velocity of the movement. The number of members represented in the Federation conventions rose from about 200,000 in 1890 and 1891 to nearly 250,000 in 1893, fell sharply to about 175,000 in 1894, then rose gradually to a little more than 250,000 in 1898, and went up by leaps and bounds to nearly 325,000 in 1899 and to more than 500,000 in 1900." Keeping these facts in mind, we note a corresponding movement in the number of union strikes, as shown in the same table. The parallel would be still more evident if based on the statistics of strikes contained in the annual reports of the Secretary of the American Federation of Labor.‡

One is forced to admit frankly that the union exercises some restraining influence upon the calling of strikes during periods of business depression, but to the writer it would appear, judg-

* Testimony before the Industrial Commission (vol. vii, Digest, p. 109, and Testimony, p. 420) shows that the Knights of Labor reached the lowest point in membership in 1895. Table VII indicates a corresponding decrease in the American Federation of Labor.

† Reports of the Industrial Commission, vol. xvii, p. xix.

‡ Each year this officer publishes the number of strikes called by affiliated organizations as reported to him.

ing from the data presented above: first, that this influence has been greatly exaggerated, and, secondly, that not enough importance has been given to the more primary causes of an increase or decrease in the numbers and membership of these organizations.

In considering the average number of strikers, establishments, and employees affected per strike, we again note how meaningless are the conclusions based upon simple averages covering long periods of time. In Table VIII averages are given for

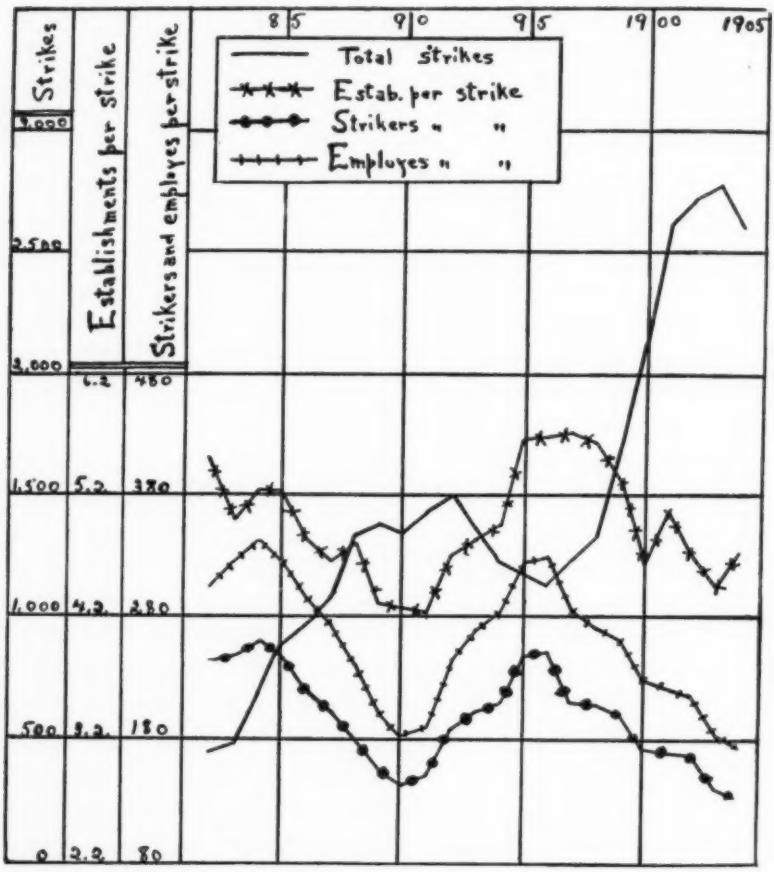
TABLE VIII.

AVERAGE NUMBER OF ESTABLISHMENTS, STRIKERS, AND EMPLOYEES PER STRIKE.

Years.	Establishments per strike.	Strikes per strike.	Employees affected per strike.
1881-86	5.7	279	339
1881-94	4.8	198	258
1881-1900	5.2	205	267
1881-1905	4.9	183	237

the years covered by each of the four reports of the Commissioner of Labor. In Diagram V, however, we note some interesting tendencies. Thus, as the number of strikes increases, the average number of strikers, establishments, and employees affected decreases, and, as the number of strikes decreases, the average number of strikers, establishments, and employees affected increases. We may conclude, therefore, that, as strikes increase in number, they decrease in size; and, as they decrease in number, they increase in size. The curves of Diagram V do not follow this rule in every instance, but the tendency is so marked and so nearly consistent throughout that the above conclusion seems justified. In fact, it is scarcely necessary to prove such a contention by means of statistics, for it is a well-known fact that in times of frequent strikes there are, for every large disturbance, a number of minor disturbances, each affecting but one establishment and a small number of men.

DIAGRAM V. CHANGES IN AVERAGE NUMBERS OF ESTABLISHMENTS, STRIKERS, AND EMPLOYEES AFFECTED BY STRIKES.



From 1896 the average number of strikers, establishments, and employees affected has shown a marked tendency to decrease, and, except for the number of establishments affected, the level reached in 1904 was lower than in any previous year. From this we might conclude that the average strike was tending to decrease in size and importance. If we take into consideration the tendency of the curves for the years previous to 1896, we

might still conclude that, if the average strike was not decreasing in size, at least it was not tending to increase. Or let us consider the matter from another standpoint. Table IX gives the percentage of employees who went out upon strike in those establishments in which strikes were called. The reports of the Commissioner of Labor do not give data for the years previous to 1887. This table seems to substantiate the conclusion that

TABLE IX.

Year.	Employees before Strike.	Strikers.	Per Cent. of Employees Striking.	Smoothed.
	(000 omitted.)	(000 omitted.)		
1887	583.9	272.8	46.7	
88	341.7	103.2	30.2	40.8
89	448.7	205.1	45.7	44.0
1890	601.5	285.9	47.5	41.0
91	488.2	245.0	50.2	42.5
92	515.4	163.5	31.7	43.1
93	521.7	195.0	37.4	43.6
94	1031.7	505.0	48.9	43.2
95	547.5	285.7	49.7	48.9
96	380.5	183.8	48.3	51.1
97	551.2	332.6	60.3	49.0
98	374.6	181.6	48.4	47.7
99	806.9	308.1	38.2	45.5
1900	915.3	399.7	43.6	42.2
01	1067.6	396.3	37.1	40.3
02	1263.7	553.1	43.7	41.2
03	1368.2	531.7	38.8	38.9
04	872.5	375.8	43.0	37.8
05	554.1	176.3	31.8	

the average strike is not becoming more wide-spread in its nature. It shows that the percentage of employees striking in establishments involved in strikes increased from 1887 to 1896, but that from the latter date down to the close of the period 1905 the percentage has steadily decreased.

A further question worthy of consideration is the effect of tradesunionism upon the size of strikes. Professor Adams says:* "Of the 'organized' or 'union' strikes there were 4385

* Adams and Sumner, "Labor Problems," p. 183.

in the five years, 1886–1890, and only 4175 in the five years, 1896–1900. Of the 'unorganized' or 'non-union' strikes there were 2319 in the former period and 2560 in the latter period. The 'union' strikes decreased 4 per cent.; the 'non-union' strikes increased 10 per cent. And as our trade unions get stronger and older, it is very probable that the strike will be even more vigorously restrained, because it is the new and poorly organized unions which foment strikes." Huebner also says:* "The immediate effect of unionism is to increase the number of strikes very rapidly,—then with increased experience the effect is to inaugurate a policy of greatly increasing the size of the strikes side by side with a less rapid increase in the simple number of strikes. The ultimate effect, as unionism becomes better organized, is to check the number of strikes, but to give them a more wide-spread effect and increased importance."

Without at first questioning the accuracy of the conclusions arrived at by both of these writers, let us examine the methods followed in obtaining them. Adams bases his remarks upon statistics grouped by five-year periods, an error already commented upon. Both writers use the data tabulated by the Commissioner of Labor under "Strikes Ordered by Labor Organizations," and from these statistics decide that such and such a thing happens to a union or to unionism as it becomes older and better organized. These data include all strikes declared by all unions, no distinction being made between the strikes ordered by a union organized in 1830 or by one organized in 1899. Neither are the strikes ordered by a sail-makers' union formed in 1857 differentiated from those of a carpenters' union organized ten years later. The former trade has few strikes; the latter, many. Thus it is that the numerous conflicts of the latter greatly outweigh the conservative influence of the former. On the face of the proposition it is readily seen that such data do not permit any one to state decisively what happens to a union or to unionism as the years pass and more experience is gained. New unions are continually being formed, old unions enter upon a series of strikes, the character of the indus-

* Huebner, "Statistical Aspect of the Strike," p. 135.

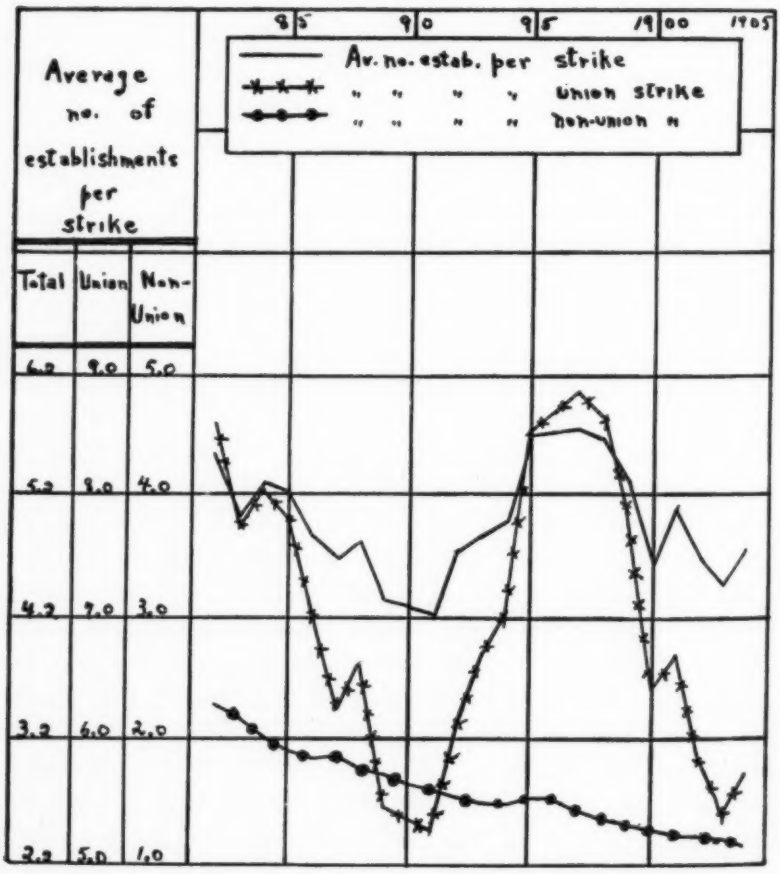
try changes, and a thousand and one things occur which sadly interfere with possible conclusions. Another difficulty lies in the fact that most writers fail to distinguish between the tendency of unionism and the tendency in the development of unions in the aggregate. Unionism may check the number of strikes, as Huebner and Adams claim, yet the number of union strikes may increase at an astonishing rate, as shown by Diagram IV. An increase in the aggregate number of union strikes may indicate nothing as to the tendency of unionism. The restraining influence of unionism, in short, the effects and results of unionism are shown only in the data afforded by individual unions; that is to say, in order to arrive at any conclusion regarding this or any other matter concerning the influence of unionism, an individual union or a number of individual unions (preferably local organizations) should be studied in detail and all changes in policies and actions carefully noted. Statistics of unions in the aggregate, of all unions, regardless of age or environment, do not afford a suitable basis from which to generalize about the tendencies of unionism. Such data, however, do enable us to decide whether or not, when considered in the aggregate, union strikes are becoming more wide-spread in importance or are occurring more frequently. Diagram IV shows that union strikes are not tending to occur less frequently.

The restraining influence of unionism is another matter. All students of the labor problem will admit that a union becomes more conservative with age and consequently strikes less frequently. Unions are often formed as a result of a strike or because a strike is being planned, the latter being the more common cause. Then, too, a new union quite often has to strike a number of times in order to discover just how far it can go in forcing its demands upon the employer. For these reasons a young organization strikes more frequently than an older one in the same trade, and it is the strikes of the former that cause the number of union strikes to increase at such a rapid rate.

Let us now consider Huebner's statement that, as it becomes

better organized, "tradesunionism tends to increase the size of the strike." We can consider this proposition from two different standpoints, (1) from that of unions in the aggregate and (2) from that of unionism. To consider the case of unions in the aggregate, we shall have recourse to statistics such as Huebner uses, but in the case of unionism mere analysis must suffice, as there are no available statistics.

DIAGRAM VI. CHANGES IN THE AVERAGE NUMBER OF ESTABLISHMENTS PER STRIKE.

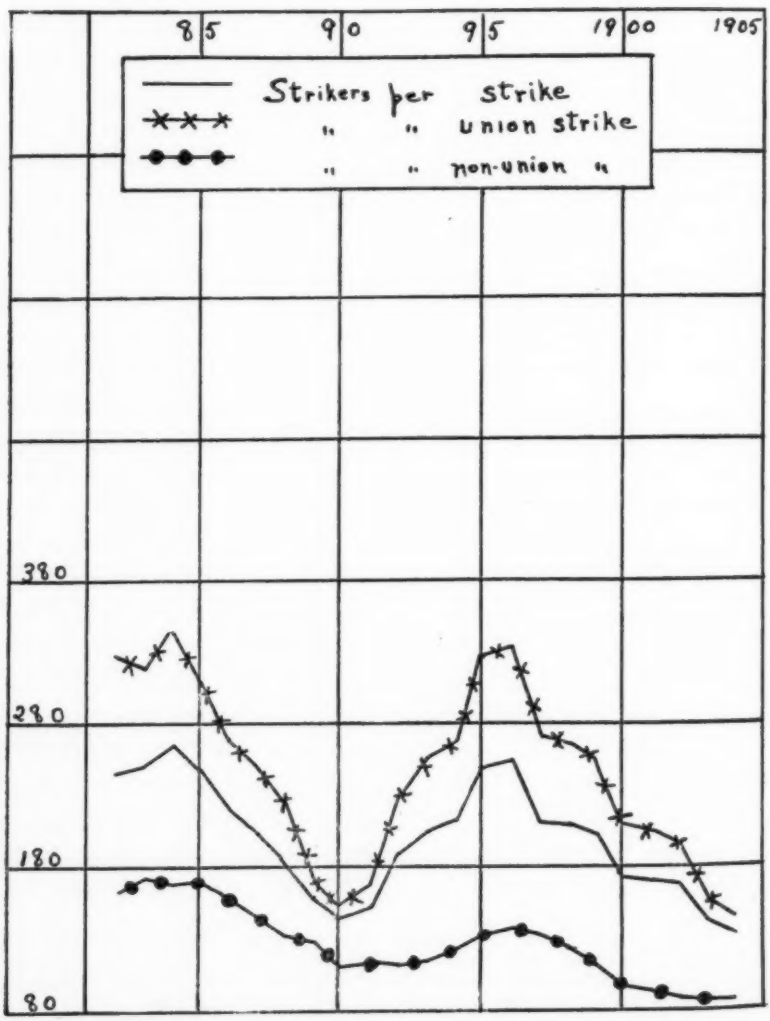


We have already seen that the average strike has not become more wide-spread. Diagrams VI and VII indicate what has happened in regard to union and non-union strikes, considered in the aggregate. Diagram VI shows that the average number of establishments affected per non-union strike steadily decreased from 1881 to 1905. The curve representing the average number of establishments per union strike shows a marked decrease from 1881 to 1891, a period of active organization and great strength on the part of the Knights of Labor. During the depression of 1893 and the consequent inactivity on the part of the unions the number of establishments per union strike increased very rapidly. From 1897 to 1905, however, during which time tradesunionism grew by leaps and bounds and became more experienced, the average decreased rapidly. Similar results are to be noted in the case of the average number of strikers affected per union and per non-union strike, as shown by Diagram VII. The level reached in this case is lower in 1904 than in any other year during the period under discussion. Thus we conclude that the average union strike does not tend to increase in size, nor does it become more wide-spread with the passing of years and the growth of experience on the part of unions in the aggregate.* It is difficult to see why the situation should be otherwise. In the first place, as long as strikes remain more or less local in nature, they will continue to be rather small in size. It is only when the cause of the trouble between the employer and the employees is wide-spread, as in the case of an eight-hour agitation, railway strikes, etc., that a very large number of men are affected. Secondly, the working class is organized to-day for the most part upon trade lines, there being comparatively few industrial unions. With each trade in a shop organized into a separate union, it is easy to see that the number of men in that factory belonging to each union is, as a rule, small. Thus, whenever a strike is called and the union quits work, a very few men only

* More accurate results could be obtained, were strikes classified in accordance with the number of strikers, establishments, and employees affected. This is partly done in Germany, where all strikes are classified as involving 2 to 5, 6 to 10, 11 to 20, 21 to 30, 31 to 50, 51 to 100, 101 to 200, 201 to 500, and 501 or more individuals.

are affected. The rest of the laborers in the city who belong to that union do not strike, neither do the men in other trades in the same factory. It is only the men who are employed at that particular trade in that particular shop who go out

DIAGRAM VII. CHANGES IN THE AVERAGE NUMBER OF STRIKERS PER STRIKE.



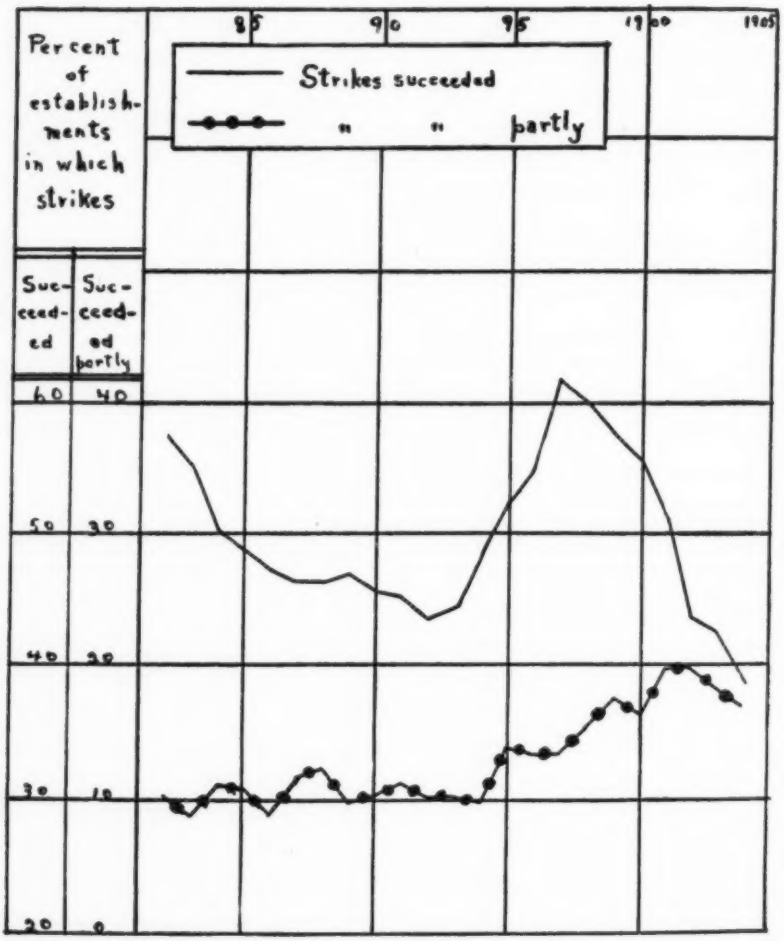
upon the strike.* Thirdly, with the growing complexity of industry the old trades are being broken up into minute subdivisions, each with its separate union. In times past all of these subdivisions belonged to the same trade and considered that they had common interests. Consequently, they struck together. But at the present time, if one of these subdivisions has a grievance, it strikes of its own accord, thus making the average union strike, of necessity, a small one. Fourthly, the change in the causes of industrial disputes is without doubt the most important reason for the decrease in the size of the union strike. During the last ten years, as we have already seen (Diagram I), the closed-shop policy and union rules have rapidly increased as causes of strikes, while wages and hours have been decreasing in importance. A strike ordered because of a demand for a closed shop or for the recognition of the union seldom affects more than one establishment because the grievance is purely local in its nature, and, inasmuch as these strikes have greatly increased in number, they have tended to diminish the size of the average union strike. The closed shop is a demand arising from old and experienced unions. It is not a grievance for the redress of which unions are formed, nor is it one that causes newly organized trades to strike. Its increasing importance as a cause of union strikes is in itself a strong refutation of Huebner's contention that unionism tends to greatly increase the size of the strike.

Diagram VIII gives the percentage of establishments in which strikes were (1) entirely successful and (2) partly successful. From the facts presented we learn that strikes were less successful in 1902, 1903, and 1904 than ever before, and that the percentage of compromised or partly successful strikes increased slowly during the period under discussion.

Diagram IX gives the percentage of establishments in which strikes failed and in which union and non-union strikes failed. A steady increase is to be noted after 1890 in the number of

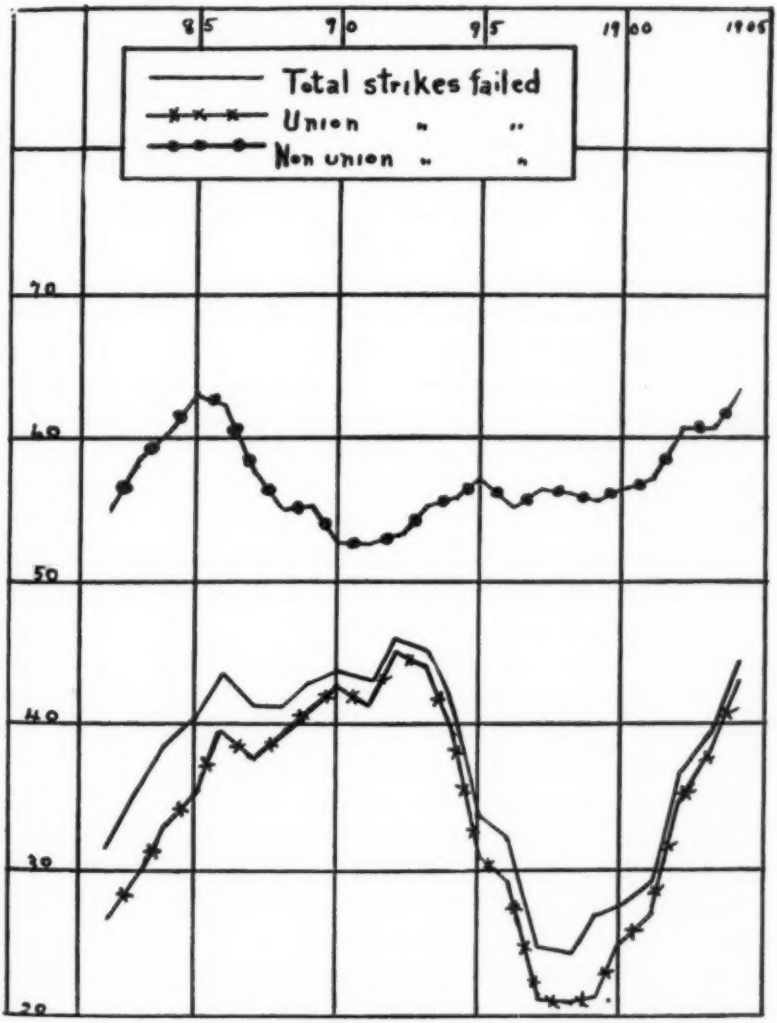
* The growth in the number of sympathetic strikes is, however, of significance in this connection.

DIAGRAM VIII. PERCENTAGE OF STRIKES WHOLLY OR PARTIALLY SUCCESSFUL.



non-union strikes that were unsuccessful. The percentage of union strikes that failed increased steadily during periods of business activity and decreased during business depressions. The tendency of union strikes to become less successful since 1898 substantiates Huebner's statement that "union strikes are not becoming more successful even though unionism is being

DIAGRAM IX. PERCENTAGE OF UNSUCCESSFUL STRIKES.



more and more thoroughly organized." The cause for this evident decrease is without doubt the large number of strikes for the closed shop, the greater portion of which have been lost.

As a result of this brief résumé of the statistical data upon strikes contained in the Twenty-first Annual Report of the United States Commissioner of Labor, we may draw the following conclusions, keeping in mind, however, that we are speaking only of the period 1881–1905:—

(1) That strikes have increased absolutely; that, as compared with the growth in population, they have increased relatively, although there may be some doubt as regards their relative increase when compared with the increase of wage-earners in the manufacturing industries.

(2) That the number of union strikes has increased more rapidly since 1896 than ever before.

(3) That it is not so much the restraining influence of unionism as the loss of membership and bargaining power, together with some decrease in the number of unions, that causes a decrease in the number of union strikes during periods of business depression.

(4) That, as strikes increase, the average number of strikers, establishments, and employees affected per strike decrease, and, as strikes decrease, the size of the average strike increases.

(5) That the average number of strikers, establishments, and employees affected per strike,—*i.e.*, the size of the average strike,—has tended to decrease since 1896.

(6) That, as unions grow stronger, the tendency is for the average union strike to decrease in size and importance.

(7) That the percentage of successful strikes decreases during periods of business prosperity and increases during "hard times."

(8) That compromised strikes are becoming more numerous.

(9) That union strikes are not becoming more successful, even though unionism is being more thoroughly organized.

(10) That tradesunionism affects the causes of strikes by reducing the importance of hours and wages and by increasing the importance of union rules, closed shop, recognition of the union, etc., as causes of strikes.

FEDERAL CENSUS REPORTS: STATISTICS OF CITIES, 1905.

By Edward M. Hartwell, Secretary Statistics Department, City of Boston.

One of the first and best fruits of placing the Federal Bureau of the Census upon a permanent basis is found in the Bureau's publications relating to the statistics of cities covering the years 1902–05. The latest number of the series is the fullest and most valuable. It is entitled "Special Reports. Statistics of Cities having a Population of 30,000 or over, 1905. Washington: Government Printing Office. 1907."

The tables of this Report relate to 154 cities, which, according to the estimates of the Bureau of the Census, had a population of 30,000 or over in 1905, the basis of estimated annual increase being one-tenth of the actual increase in the period 1890–1900. The cities and the subject-matter are classified according to population under four groups, namely: (1) cities of 300,000 or more inhabitants; (2) cities of 100,000 to 300,000; (3) cities of 50,000 to 100,000; (4) cities of 30,000 to 50,000. No account is taken, as in Bulletin 20, 1905, of cities of 25,000 to 30,000 inhabitants.

Table 1 shows (1) the date of incorporation, (2) area, and (3) population estimated as of June 1 for 1905, 1904, and 1903, and enumerated for 1900 and 1890. Like most of the tables, this is a reference table, consisting (*a*) of summary statements regarding the whole number of cities and of each of the constituent groups and (*b*) of detailed data for each city included in the table. All the data are expressed in absolute numbers. The table affords direct comparison for the years specified of the total population of the several groups and their aggregate population, and of detailed data relating to each of the 154 cities. But inquirers who make other comparisons—*e.g.*, be-

tween cities of equal population, cities grouped by States or geographical sections—must rearrange the primary data given in the table for themselves. This remark applies to practically all the forty-six other tables as well as to Table I.

The following tables, compiled from Table I, illustrate the value of the tables as sources of data for compiling secondary comparative tables. In these tables the absolute numbers are derived directly from Table I, while the per cents. have been supplied by the writer.

The following tabular statement shows, by groups, the increase in the number of cities having a population of 30,000 or over, enumerated in 1890 and 1900, estimated for other years:

	1905.	1904.	1903.	1902.	1900.	1890.
Total	154	149	148	145	134	100
Group 1	15	14	14	14	11	6
Group 2	25	25	25	25	27	20
Group 3	47	45	43	43	41	30
Group 4	67	65	66	63	55	44

The following statement shows the percentage of (1) actual increase in 154 cities, by groups, 1890–1900, and (2) of estimated increase 1900–05:—

CITIES WITH POPULATION OF 30,000 OR OVER IN 1905.

A. PER CENT. OF ACTUAL INCREASE, 1890–1900.

All Cities.	Group 1.	Group 2.	Group 3.	Group 4.
154	15	25	47	67
33.34	32.99	37.16	29.68	34.30

B. PER CENT. OF INCREASE OF ESTIMATED POPULATION, 1900–05.

	All Cities.	Group 1.	Group 2.	Group 3.	Group 4.
A. Modified by Census in 10 States, 1904 and 1905	13.37	12.69	14.34	14.34	13.93
B. On basis of actual increase, 1890–1900	12.50	12.40	13.55	11.44	12.77

Inspection of the foregoing statement leads to the conclusion that in each of the groups the relative increase of estimated population in the period 1900–05 was greater than the increase calculated on the basis of their actual increase 1890–1900. This conclusion is corroborated by the actual increase of population, 1900–05, shown by the returns of the State Census in 1905 in eight States for 57 cities, having an aggregate enumerated population of 9,392,297 in 1905. The per cent. of actual increase for 57 cities was 14.30 against 12.58 of calculated increase. In other words, Table I affords positive evidence, not to be found elsewhere in convenient form, that in the case of more than a third of the cities embraced in it, having an aggregate population amounting to 42.29 per cent. of the total population given for 154 cities (22,204,506), the actual increase of population, 1900–1905, was 14.30 per cent. against 12.58 per cent. of calculated increase. It may be noted that there was a State census taken in Michigan in 1904 which showed an aggregate population of 530,342 in the five cities of the State included in Table I, or an actual increase of 49,577 (10.31 per cent.) from 1900 against a calculated increase of 43,846 (9.12 per cent.).

TABLE I.—SHOWING INCREASE OF POPULATION SINCE 1900 IN CITIES OF 30,000 OR OVER OF ENUMERATED POPULATION, 1905.

State.	Number of Cities.	Population by State Census.	Increase from 1900.			
			Actual.	Per Cent.	* Calculated.	Per Cent.
Massachusetts . . .	19	1,735,192	155,671	9.86	199,764	16.93
New York	12	5,145,166	673,727	15.07	565,171	12.64
New Jersey	10	1,038,729	131,982	14.56	118,282	13.04
Wisconsin	5	441,442	38,755	9.62	58,648	14.56
Iowa	4	198,316	31,515	18.89	10,860	6.51
Minnesota	3	523,939	105,187	25.11	43,872	10.48
Rhode Island	3	274,212	31,180	12.82	31,212	12.84
Florida	1	35,301	6,872	24.18	5,614	19.75
Total	57	9,392,297	1,174,889	14.30	1,033,423	12.58

* On basis of actual increase, 1890–1900.

The State census of Kansas, also taken in 1904, showed an aggregate population of 128,716 in the three cities of that State included in Table I, or an actual increase of 19,019 (17.43 per cent.) from 1900 against a calculated increase of 6,608 (6.02 per cent.).

Inspection of the foregoing tables discloses considerable diversity in the relative actual increase of population in cities by State groups. It also shows a greater relative increase in the cities of Minnesota, Iowa, and Florida than in those of New York and New Jersey, and, furthermore, that the cities of Massachusetts and Wisconsin failed to grow as fast in 1900–05 as in the previous decade.

Whether the population of the cities in the States which had a census in 1905 increased relatively more than the rest of the population cannot be determined from any data furnished by the Bureau of the Census in this Report.

The geographical distribution of cities of 30,000 inhabitants or over is of considerable interest, as most of them are east of the Mississippi River and north of the line of the Ohio River, continued eastward, roughly speaking. There is a marked concentration of the cities of this class within a comparatively small number of States, as is shown in the following statement, which includes all the States having five or more cities with a population of 30,000 or over. Beginning with Massachusetts, the eleven States specified constitute a continuous belt from the Atlantic Ocean to the Great Lakes and the Mississippi River. They contain 62 per cent. of the 154 cities and 73 per cent. of their population. In them we find the greatest pressure of population and the most diversified and urgent problems of city government.

A glance at this statement discloses the fact that the first six States belonged to the thirteen original States, and that the rest were among the first free States to be settled by the emigration from the original States. Again, according to the nomenclature adopted in the Federal Census of 1900, the first six States belong to the North Atlantic division and the last five to the North Central division.

State.	Number of Cities.	Aggregate Population.
1. Massachusetts	19	1,735,192
2. Rhode Island	3	274,212
3. Connecticut	5	384,535
4. New York	12	5,145,166
5. New Jersey	10	1,038,729
6. Pennsylvania	16	2,629,120
7. Ohio	9	1,356,452
8. Indiana	5	320,412
9. Illinois	7	2,238,361
10. Michigan	5	542,736
11. Wisconsin	5	441,442
Total	96	16,106,357

Table II serves to show the distribution by geographical divisions of the 154 cities covered by the Report and their absolute and relative increase in population in the period 1900–05.

The 50 States and Territories included in the several divisions, with the number of cities in each given in parenthesis, are as follows: *I. North Atlantic*, Maine (1), New Hampshire (1), Vermont (0), Massachusetts (19), Rhode Island (3), Connecticut (5), New York (12), New Jersey (10), Pennsylvania (16), 9 States in all; *II. South Atlantic*, Delaware (1), Maryland (1), District of Columbia (1), Virginia (2), West Virginia (1), North Carolina (0), South Carolina (1), Georgia (4), and Florida (1), 9 States in all; *III. North Central*, Ohio (9), Indiana (5), Illinois (7), Michigan (5), Wisconsin (5), Minnesota (3), Iowa (4), Missouri (4), North Dakota (0), South Dakota (0), Nebraska (3), and Kansas (3), 12 States in all; *IV. South Central*, Kentucky (2), Tennessee (4), Alabama (3), Mississippi (0), Louisiana (1), Texas (4), Indian Territory (0), Oklahoma (0), and Arkansas (1), 9 States in all; and *V. Western*, Montana (1), Wyoming (0), Colorado (2), New Mexico (0), Arizona (0), Utah (1), Nevada (0), Idaho (0), Washington (3), Oregon (1), and California (4), 11 States in all.

TABLE II.—CITIES WITH POPULATION OF 30,000 OR OVER IN 1905.

A. Number of Cities by Divisions and Groups, 1905.

Division.	Total.	Group 1.	Group 2.	Group 3.	Group 4.
I. North Atlantic . . .	67	5	11	25	26
II. South Atlantic . . .	12	2	1	5	4
III. North Central	48	6	8	9	25
IV. South Central	15	1	2	4	8
V. Western	12	1	3	4	4
Total	154	15	25	47	67

B. Estimated Population, 1905.

I. North Atlantic . . .	11,324,701	6,753,920	1,737,186	1,821,959	1,011,636
II. South Atlantic . . .	1,455,579	849,100	102,702	352,289	151,488
III. North Central	7,026,220	4,046,685	1,383,903	635,865	959,767
IV. South Central	1,221,766	309,639	343,895	253,921	314,311
V. Western	1,176,240	364,677	380,172	283,132	148,259
Total	22,204,506	12,324,021	3,947,858	3,347,166	2,585,461

C. Increase in Population, 1900–05.

I. North Atlantic . . .	1,286,435	788,126	169,700	209,249	119,360
II. South Atlantic . . .	129,779	61,425	12,830	34,056	21,468
III. North Central	942,780	494,183	222,288	99,776	126,533
IV. South Central	117,099	22,535	36,844	32,464	25,256
V. Western	143,061	21,895	53,408	44,256	23,502
Total	2,619,154	1,388,164	495,070	419,801	316,119

D. Per Cent. of Increase of Population, 1900–05.

I. North Atlantic . . .	12.82	13.21	10.83	12.97	13.38
II. South Atlantic . . .	9.79	7.79	14.28	10.70	16.51
III. North Central	15.50	13.91	19.18	18.61	15.18
IV. South Central	10.60	7.85	12.00	14.66	8.74
V. Western	13.85	6.39	16.34	18.53	18.84
Total, 5 years, 1900–05	13.37	12.69	14.34	14.34	13.93

The most salient facts brought out by Table II (see D) are: (1) the greater per cent. of increase in population of the cities of the North Central division in comparison with those of other divisions; (2) the greater per cent. of increase for the cities of Groups 1, 2, and 3 in that division; (3) the fact that the per cent. of increase in the cities of Group 4 in the Western division considerably exceeded that of cities of the same group in any other division; and (4) that Groups 2 and 3, with the same per cent. of increase (14.34), surpassed Groups 1 and 4 in per cent. of increase in the period 1900–05. It must be admitted, however, that strict comparisons between the several groups, whether as to population or expenses of government, cannot be made, for the reason that the groups are incommensurate.

Tables III–VI, inclusive, are introduced for the purpose of showing some of the more significant costs of government: (1) in the ten largest cities of the country; and (2) in two characteristic groups,—namely, the cities of Massachusetts and Ohio. These tables serve also to indicate the variety and character of the financial tables set forth in the report under consideration.

Thus the figures in Table III for Population are derived from Table I; those for Assessed Valuation, from "Table 28. Assessed Valuation of Property, etc., Basis of Assessment and General Property Taxes levied, 1905"; for Net Debt, from "Table 23. Total and Per Capita Debt Obligations at Close of Year, together with Changes during the Year in Par Value of Debt Obligations and of Sinking Fund Assets, 1905; Comparative Summary 1902–05"; and for Assets, from "Table 27. Value at Close of Year of Principal Permanent Properties, etc., 1905."

In Tables III and IV, Cincinnati, eleventh city as to population in 1900, is given tenth place, instead of San Francisco, because the Bureau of the Census refrained from publishing per capita averages of the decimated population of San Francisco for 1905. Inspection of the per capita averages, and the figures showing the rank based upon them, in III B and IV B, leads to the conclusion that the taxable basis, corporate pay-

ments, and selected expenses of the several cities are not proportional to their populations. Again, the range between New York and Cincinnati in most particulars is so great as to render averages for the ten cities of little practical value, particularly if one seeks to determine the rank of the several cities as regards the economy and efficiency of their housekeeping. These facts should be taken account of by those who undertake to institute strict comparisons of any kind between the groups of cities, or between cities of the same group, as set forth in the series of tables contained in the Report.

Those who would charge any city or group of cities with extravagance or inefficiency, on the basis of the variations found in the tables of the Report, should give careful heed to the warning set forth on page 79, under description of general tables:

"The most important features of this table [Table 30] and the other tables with per capita averages consist in the great differences shown by different cities in the amounts of total and per capita payments and receipts of the several classes. . . . In the case of most of the cities the variations in per capita payments and receipts reflect differences in municipal organizations or administration; for a few they unquestionably result from imperfections of the census report. . . . To refer all variations found in the tables to any one single factor or cause would inevitably be unjust to many cities. The figures of the table can be correctly used only in connection with some knowledge of the local condition or circumstances affecting any class of data to be compared by per capita averages."

On the strength of per capita averages for general property tax, debt, corporate payments for expenses, etc., published in the series of reports on Statistics of Cities by the Bureau of the Census, Boston's city government has been pronounced guilty of great extravagance and inefficiency by credulous politicians, publicists, and newspaper writers, who have disregarded the warnings of the Bureau of the Census and even the plain showing of the tables whence their arguments were derived.

TABLE III.—LEADING CITIES OF THE UNITED STATES, 1905.

A. Absolute Numbers.

City.	Population (estimated).	Assessed Valuation.*	Rank.	Net Debt.	Rank.	Assets.	Rank.
1. New York .	4,000,403†	$6,194,329,218	1	$475,670,321	1	$752,034,538	1
2. Chicago . .	1,990,750	2,719,944,166	2	66,355,106	3	139,769,989	4
3. Philadelphia	1,417,062	1,238,861,426	4	63,490,228	4	203,641,550	2
4. St. Louis .	636,973	1,102,260,413	5	20,480,194	8	58,998,121	6
5. Boston . .	595,380†	1,260,908,081	3	67,479,003	2	152,992,670	3
6. Baltimore .	546,217	503,144,182	6	26,805,989	6	41,559,022	9
7. Cleveland .	437,114	356,721,666	8	24,210,387	7	47,342,765	7
8. Buffalo . .	376,914†	275,278,359	10	18,904,018	10	26,173,952	10
9. Pittsburg .	364,161	501,565,740	7	19,686,123	9	42,939,800	8
10. Cincinnati .	343,337	348,007,886	9	34,398,412	5	59,514,575	5
Total . . .	10,708,311	$14,501,021,137		$817,479,781		$1,524,966,982	

B. Relative Numbers,—*i.e.*, Per Capita.

City.	General Property Tax.	Rank.	Assessed Valuation.*	Rank.	Net Debt.	Rank.	Assets.	Rank.
1. New York .	$22.10	2	$1,548.43	3	$118.91	1	$187.99	2
2. Chicago . .	11.38	9	1,366.30	5	33.33	9	70.21	9
3. Philadelphia	12.68	7	874.25	8	44.88	8	143.70	4
4. St. Louis .	14.74	5	1,746.93	2	32.15	10	93.50	7
5. Boston . .	31.17	1	2,117.82	1	113.34	2	256.96	1
6. Baltimore .	12.09	8	921.14	7	49.08	7	76.09	8
7. Cleveland .	13.14	6	816.08	9	55.39	4	108.31	6
8. Buffalo . .	15.66	4	730.35	10	50.15	6	69.44	10
9. Pittsburg .	16.37	3	1,377.32	4	54.06	5	117.92	5
10. Cincinnati .	10.69	10	1,013.60	6	100.19	3	173.34	3
Total . . .	$17.26		$1,354.18		$76.35		$142.40	

* On basis of 100 per cent. of true value. † Enumerated.

For instance, a certain religious newspaper pronounced Boston's city government "the worst in Christendom" because its debt per capita exceeded that of any other city. Yet Table 38, Census Bulletin 20, 1905, which on page 440 gave Boston's per capita total debt for 1903 as $148.25, on the opposite page gave Newton, Mass., Boston's near neighbor, $188.24 per capita of total debt for 1903. It may be remarked, in passing, that it appears from the population estimates of Boston and Newton for 1903, viewed in the light of the census of 1905, that their corresponding estimates given in Bulletin 20 were too high, and consequently the per capita figures for both cities, throughout Bulletin 20, were too low.

Beyond question the per capita net debt of Boston for 1905 (namely, $113.34) is high as compared with that of any other city included in Table III B, but it is also to be noted that, while Boston ranked second as regards net debt, it was first in respect to assessed valuation and assets. Still, Boston's net debt per capita, $113.34 for 1905, given in Table 23 of the Report, as appears from the same table, was exceeded by that of New York City $118.91, and of Newton, Mass., $116.89, and was approached by that of Seattle, Wash., $105.22, and Cincinnati, $100.19. What conclusion can be drawn from such per capita averages, except that the factors which determine their variations cannot be determined without careful and patient analysis of the debt, the objects for which it was incurred, and the character and value of the improvements acquired on account of debt obligations? Tables 23 and 27 of the Report afford some data for an approximate analysis, but the labor involved in even an approximate analysis is such as most critics of city government would naturally shrink from.

The figures in Table IV for Corporate Payments, Expenses, and Outlays are derived from "Table 4. Principal Classes of Corporate Payments and Receipts"; for Expenses of Police and Highways, from "Table 30. Payments for Specified Expenses and Outlays, Total and Per Capita," which is in effect a summary of the most elaborate and detailed table in the Report,—namely, "Table 5," covering pages 138–193. The Expenses of

Schools are taken from "Table 32. Costs and Receipts for Schools, Total and Per Capita"; and those for Interest, from "Table 5. Payments for General Expenses and Special Service Expenses, etc., 1905; Comparative Summary, 1902–05." In passing, it may be said of Table 5 that the data in it are set forth under nine general heads, *e.g.*: I. General Government; II. Protection of Life and Property; IV. Highways; V. Charities and Correction; VI. Education, and under numerous sub-heads for departments; *e.g.*, Executive Boards and Commissions, Elections, Police, Hospitals, Parks, etc. Thanks to its elaborate system of rubrics and its division of expenses into "salaries and wages," "all other," etc., intra-tabular comparison of cities in respect to a very great number of particulars is rendered possible.

Tables IV–VI have been prepared in order to determine the rank of the cities included therein with respect to the more important classes of payments for expenses of maintenance. Reference to "Table 33. Per Cent. Distribution, by Object of Payment of General Service Expenses, 1905," page 314 of the Report, shows that, of the total expenses of 154 cities, 25.9 per cent. were for schools, 12.7 for police department, 10.9 for highways, and 10.1 for interest, the remaining per cents. being less. Table 33, it may be remarked, is a new and helpful table, and especially welcome because it summarizes in terms of percentage Table 5, the most extensive and elaborate table in the Report.

The figures in Tables V and VI, whose rubrics correspond with the rubrics in Tables III and IV, respectively, are derived from the sources specified above.

TABLE IV.—LEADING CITIES OF THE UNITED STATES, 1905. PAYMENTS, BY SELECTED OBJECTS.

A. Absolute Numbers.

City.	Corporate Payments for:				Police Department.	Rank.	Highways.	Rank.	Schools.	Rank.	Interest.	Rank.
	Expenses.	Rank.	Outlays.	Rank.								
1. New York	$103,794,155	1	$60,699,022	1	$13,361,668	1	$6,757,480	1	$21,522,749	1	$8,816,558	1
2. Chicago	26,295,598	2	15,405,154	2	4,118,202	2	1,157,398	5	7,331,149	2	2,472,946	2
3. Philadelphia . . .	25,828,719	3	6,706,355	4	3,290,943	3	2,662,056	2	4,898,092	3	1,136,231	5
4. St. Louis	12,944,892	5	4,999,297	6	1,600,217	5	1,358,479	4	2,106,529	5	572,858	8
5. Boston	21,166,675	4	7,946,310	3	1,923,490	4	2,028,769	3	3,690,349	4	2,172,103	3
6. Baltimore	7,856,440	6	5,049,825	5	1,089,498	6	701,279	8	1,558,386	7	644,702	7
7. Cleveland	6,914,773	7	4,328,053	7	631,084	9	794,207	6	1,921,568	6	750,338	6
8. Buffalo	6,202,385	9	2,073,995	10	822,885	7	751,648	7	1,400,981	9	556,002	9
9. Pittsburg	5,927,991	10	3,906,732	8	588,920	10	596,073	10	1,462,606	8	546,680	10
10. Cincinnati	6,240,162	8	3,740,128	9	638,469	8	620,366	9	1,136,846	10	1,145,627	4
Total	$223,171,790		$115,140,515		$28,065,376		$17,427,755		$47,029,255		$18,814,045	

B. Relative Numbers,—*i.e.*, Per Capita.

City.	Corporate Payments for:				Police Department.	Rank.	Highways.	Rank.	Schools.	Rank.	Interest.	Rank.
	Expenses.	Rank.	Outlays.	Rank.								
1. New York	$25.95	2	$15.17	1	$3.34	1	$1.69	7	$5.38	2	$2.20	3
2. Chicago	13.21	10	7.74	8	2.07	6	0.58	10	3.68	6	1.24	7
3. Philadelphia . . .	18.23	4	4.73	10	2.32	4	1.88	4	3.46	7	0.81	10
4. St. Louis	20.33	3	7.85	7	2.51	3	2.13	2	3.31	8	0.90	9
5. Boston	35.55	1	13.35	2	3.23	2	3.41	1	6.20	1	3.65	1
6. Baltimore	14.38	9	9.25	6	1.99	7	1.28	9	2.85	9	1.18	8
7. Cleveland	15.82	8	9.90	5	1.44	10	1.82	5	4.40	3	1.72	4
8. Buffalo	16.46	6	5.50	9	2.18	5	1.99	3	3.72	5	1.41	6
9. Pittsburg	16.28	7	10.73	4	1.62	9	1.64	8	4.01	4	1.50	5
10. Cincinnati	18.18	5	10.89	3	1.86	8	1.81	6	3.31	8	3.34	2
Total	$20.84		$10.72		$2.62		$1.63		$4.39		$1.76	

TABLE V.—CITIES OF MASSACHUSETTS WITH POPULATION OF 30,000 OR OVER, 1905.

A. Absolute Numbers.

City.	Population.	Corporate Payments for:				Selected Expenses.							
		Expenses.	Rank.	Outlays.	Rank.	Police Department.	Rank.	Highways.	Rank.	Schools.	Rank.	Interest.	Rank.
1. Boston . . .	595,380	$21,166,675	1	$7,946,310	1	$1,923,490	1	$2,028,769	1	$3,690,349	1	$2,172,103	1
2. Worcester .	128,135	2,318,931	2	386,562	3	163,027	2	299,989	2	624,887	2	79,770	9
3. Fall River .	105,762	1,626,495	4	373,713	4	145,768	3	195,923	6	373,214	6	147,728	4
4. Cambridge .	97,434	1,991,343	3	928,570	2	152,342	3	231,699	4	491,362	3	288,351	2
5. Lowell . . .	94,889	1,617,554	5	177,639	12	144,057	4	276,624	3	392,043	5	125,787	5
6. Lynn	77,042	1,478,010	7	259,460	9	97,758	7	130,905	11	264,706	9	105,514	8
7. New Bedford,	74,362	1,205,506	9	186,185	11	122,733	6	142,561	10	270,799	8	122,145	6
8. Springfield .	73,540	1,351,317	8	362,598	5	95,303	8	218,366	5	426,355	4	59,296	13
9. Lawrence . .	70,050	939,527	12	113,131	15	73,154	10	151,113	9	218,675	11	59,593	12
10. Somerville .	69,272	1,166,114	10	156,659	13	79,467	9	169,327	7	332,172	7	111,582	7
11. Holyoke . .	49,934	975,112	11	274,376	7	58,262	12	105,538	12	201,314	12	74,970	10
12. Brockton . .	47,794	713,457	14	323,822	6	57,370	13	79,312	18	170,037	16	56,727	14
13. Malden . . .	38,037	726,305	13	73,076	18	35,683	19	97,052	13	193,278	13	70,368	11
14. Haverhill . .	37,830	605,672	15	62,707	19	35,998	18	79,458	17	170,728	15	27,925	18
15. Salem . . .	37,627	571,465	17	252,608	10	43,921	15	95,163	14	137,699	17	22,590	19
16. Chelsea . . .	37,289	602,988	16	79,094	17	45,632	14	84,283	16	179,445	14	56,374	15
17. Newton . .	36,827	1,503,601	6	261,995	8	70,594	11	166,997	8	238,179	10	157,155	3
18. Fitchburg . .	33,021	521,573	18	119,575	14	37,970	17	87,244	15	123,423	19	43,351	16
19. Taunton . .	30,967	517,551	19	97,302	16	38,811	16	63,030	19	125,664	18	42,284	17
Total . .	1,735,192	$41,599,196		$12,435,382		$3,421,340		$4,703,353		$8,624,329		$3,823,613	

B. Relative Numbers,—*i.e.*, Per Capita.

City.	Corporate Payments for:				Selected Expenses.							
	Expenses.	Rank.	Outlays.	Rank.	Police Department.	Rank.	Highways.	Rank.	Schools.	Rank.	Interest.	Rank.
1. Boston	$35.55	2	$13.35	1	$3.23	1	$3.41	2	$6.20	2	$3.65	2
2. Worcester	18.10	8	3.02	12	1.27	8	2.34	10	4.88	6	0.62	17
3. Fall River	15.38	16	3.53	9	1.38	6	1.85	17	3.53	17	1.40	9
4. Cambridge	20.44	3	9.53	2	1.56	4	2.38	9	5.05	5	2.96	3
5. Lowell	17.05	9	1.87	17	1.52	5	2.92	4	4.13	10	1.33	11
6. Lynn	19.18	5	3.37	10	1.27	8	1.70	18	3.44	18	1.37	10
7. New Bedford	16.21	12	2.50	13	1.65	3	1.92	16	3.64	15	1.64	5
8. Springfield	18.38	7	4.93	7	1.30	7	2.97	3	5.80	3	0.81	15
9. Lawrence	13.41	19	1.62	19	1.04	14	2.16	12	3.12	19	0.85	14
10. Somerville	16.84	10	2.26	14	1.15	13	2.44	8	4.80	8	1.61	6
11. Holyoke	19.53	4	5.49	6	1.17	12	2.11	13	4.03	12	1.50	8
12. Brockton	14.93	18	6.78	4	1.20	11	1.66	19	3.56	16	1.19	13
13. Malden	19.09	6	1.92	16	0.94	16	2.55	6	5.08	4	1.85	4
14. Haverhill	16.01	14	1.66	18	0.95	15	2.10	14	4.51	9	0.74	16
15. Salem	15.19	17	6.71	5	1.17	12	2.53	7	3.66	14	0.60	18
16. Chelsea	16.17	13	2.12	15	1.22	10	2.26	11	4.81	7	1.51	7
17. Newton	40.83	1	7.11	3	1.92	2	4.53	1	6.47	1	4.27	1
18. Fitchburg	15.80	15	3.62	8	1.15	13	2.64	5	3.74	13	1.31	12
19. Taunton	16.71	11	3.14	11	1.25	9	2.04	15	4.06	11	1.37	10
Total	$23.97		$7.17		$1.96		$2.71		$4.91		$2.20	

TABLE VI.—CITIES OF OHIO WITH POPULATION OF 30,000 OR OVER, 1905.

A. Absolute Numbers.

City.	Population.	Corporate Payments for:				Selected Expenses.							
		Expenses.	Rank.	Outlays.	Rank.	Police Department.	Rank.	Highways.	Rank.	Schools.	Rank.	Interest.	Rank.
1. Cleveland . .	437,114	$6,914,773	1	$4,328,053	1	$631,084	2	$794,207	1	$1,921,568	1	$750,338	2
2. Cincinnati . .	343,337	6,240,162	2	3,740,128	2	638,469	1	620,366	2	1,136,846	2	1,145,627	1
3. Toledo . . .	155,287	1,833,493	4	1,112,421	4	151,572	3	234,812	3	483,474	4	241,903	3
4. Columbus . .	142,105	1,959,140	3	1,704,933	3	148,952	4	111,534	4	512,643	3	160,068	4
5. Dayton . . .	98,350	1,186,678	5	643,619	5	117,101	5	100,982	5	351,296	5	114,424	5
6. Youngstown .	51,516	691,823	6	230,408	7	70,552	6	58,378	8	193,035	7	40,933	8
7. Akron	49,403	695,385	7	236,782	6	45,753	7	86,948	6	198,127	6	54,443	7
8. Springfield . .	41,433	535,911	8	125,850	9	33,748	8	69,019	7	130,819	8	24,702	9
9. Canton . . .	37,907	386,501	9	187,259	8	23,955	9	33,109	9	124,737	9	65,859	6
Total . .	1,356,452	$20,443,866		$12,309,453		$1,861,186		$2,109,355		$5,052,545		$2,598,297	

B. Relative Numbers,—*i.e.*, Per Capita.

City.	Corporate Payments for:				Selected Expenses.							
	Expenses.	Rank.	Outlays.	Rank.	Police Department.	Rank.	Highways.	Rank.	Schools.	Rank.	Interest.	Rank.
1. Cleveland	$15.82	2	$9.90	3	$1.44	2	$1.82	1	$4.40	1	$1.72	3
2. Cincinnati	18.18	1	10.89	2	1.86	1	1.81	2	3.31	6	3.34	1
3. Toledo	11.81	8	7.16	4	0.98	6	1.51	5	3.11	9	1.58	4
4. Columbus	13.79	4	12.00	1	1.05	5	0.78	9	3.61	4	1.12	6
5. Dayton	12.07	7	6.54	5	1.19	4	1.03	7	3.57	5	1.16	5
6. Youngstown	13.43	5	4.47	8	1.37	3	1.13	6	3.74	3	0.79	8
7. Akron	14.08	3	4.79	7	0.93	7	1.76	3	4.01	2	1.10	7
8. Springfield	12.93	6	3.04	9	0.81	8	1.67	4	3.16	8	0.59	9
9. Canton	10.20	9	4.94	6	0.63	9	0.87	8	3.29	7	1.73	2
Total	$15.07		$9.07		$1.37		$1.55		$3.72		$1.92	

Judged by the per capita averages in Table IV B, which assigns first rank to Boston among the ten leading cities, as regards corporate payments for expenses, highways, schools, and interest, and second rank for expenses of outlays and police department, Boston's pre-eminence as to the costliness of her city government appears to be alike indubitable and unenviable. But there are countervailing considerations, as appears from Tables 23 and 30, whence the data of Table IV B are derived. Those tables clearly show that the per capita expenses of some other cities, for certain leading items, are quite as disproportionately great in comparison with those of the ten leading cities.

This is brought out quite clearly in the following tabular statements which seem to warrant the suggestion that high rank as regards per capita average payments for expenses does not of itself constitute sufficient and convincing evidence of extravagant government in the cities implicated. It is noteworthy that all of the cities included in the two lists of minor cities given above, excepting Washington, D.C., belong either to the North Atlantic or the Western Division of States. Not a single city belonging to the North Central Division is found in either list, while three cities of Massachusetts appear in the first and two in the second list.

The question arises whether the costs of city government in certain States or groups of States are not legitimately greater owing to the prevalence of a higher scale of prices for salaries, wages, and materials than in other States. Table VII shows the comparative cost of public schools for the cities of Massachusetts, Pennsylvania, and Ohio, respectively, its data being taken from Table 32 of the Census Report. Inspection of the per capita average payments for teachers' salaries in Table VII, renders it clear that the hire of teachers costs more in the cities of Massachusetts than in the cities of Pennsylvania or Ohio, although more satisfactory average salaries could be computed if the number of teachers in the several cities were given in the Report.

A. CORPORATE PAYMENTS FOR EXPENSES.

Leading Cities.

City.	Population.	Per Capita.
1. Boston	595,380	$35.55
2. New York	4,000,034	25.95
3. St. Louis	636,973	20.33

Minor Cities.

1. Newton, Mass.	36,827	$40.83
2. Pueblo, Col.	30,457	22.96
3. Washington, D.C.	302,883	22.61
4. Atlantic City, N.J.	37,593	21.87
5. Denver, Col.	150,317	21.61
6. Spokane, Wash.	45,313	21.41
7. Seattle, Wash.	99,586	20.84
8. Cambridge, Mass.	97,434	20.44
9. Portland, Me.	54,330	19.59
10. Lynn, Mass.	77,042	19.18

B. PAYMENTS FOR EXPENSES OF SCHOOLS.

Leading Cities.

City.	Population.	Per Capita.
1. Boston	595,380	$6.20
2. New York	4,000,034	5.38
3. Cleveland	437,114	4.40

Minor Cities.

1. Pueblo, Col.	30,457	$7.31
2. Spokane, Wash.	45,313	6.87
3. Salt Lake City, Utah	58,914	6.68
4. Newton, Mass.	36,827	6.47
5. Butte, Mont.	41,757	6.14
6. Springfield Mass.	73,540	5.80
7. Seattle, Wash.	99,586	5.69
8. Oakland, Cal.	72,670	5.61
9. Sacramento, Cal.	30,732	5.49
10. Yonkers, N.Y.	61,414	5.34

TABLE VII.—COMPARATIVE STATEMENT OF COST OF PUBLIC SCHOOLS, 1905.

A. Cities of Massachusetts with* Population of 30,000 or More.

Name of City.	Population.	Cost of Operation and Maintenance.								Payments for Outlays.	
		Aggregate.		Payments for Expenses.				Interest on Value of Buildings, Grounds, and Equipment.			
				Salaries of Teachers.		All Other.					
		Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.
Boston	595,380	$4,300,971	$7.22	$2,677,001	$4.50	$1,013,348	$1.70	$610,622	$1.03	$1,033,829	$1.74
Worcester	128,135	725,807	5.66	458,308	3.58	166,579	1.30	100,920	0.79	26,955	0.21
Fall River	105,762	428,906	4.06	252,539	2.39	120,675	1.14	55,692	0.53	48,358	0.46
Cambridge	97,434	574,374	5.90	366,011	3.76	125,351	1.29	83,012	0.85	128,313	1.32
Lowell	94,889	458,773	4.83	234,222	2.47	157,821	1.66	66,730	0.70	34,868	0.37
Lynn	77,042	350,943	4.56	190,179	2.47	74,527	0.97	86,237	1.12	21,583	0.28
New Bedford	74,362	325,044	4.37	188,137	2.53	82,662	1.11	54,245	0.73	224,018	1.67
Springfield	73,540	509,797	6.93	287,220	3.91	139,135	1.89	83,442	1.13	160,672	3.54
Lawrence	70,050	299,931	4.28	161,375	2.30	57,320	0.82	81,236	1.16	54,981	0.78
Somerville	69,272	388,151	5.60	254,674	3.68	77,498	1.12	55,979	0.81	53,015	0.77
Holyoke	49,934	234,185	4.69	139,160	2.79	61,714	1.24	33,311	0.67	18,366	0.37
Brockton	47,794	197,247	4.13	133,600	2.80	36,437	0.76	27,210	0.57	112,193	2.35
Malden	38,037	227,041	5.97	133,397	3.51	59,881	1.57	33,763	0.89	22,122	0.58
Haverhill	37,830	194,280	5.14	114,990	3.04	55,738	1.47	23,552	0.62	19,320	0.51
Salem	37,627	159,204	4.23	195,922	2.55	41,777	1.11	21,505	0.57	3,227	0.09
Chelsea	37,289	207,979	5.58	115,605	3.10	63,840	1.71	28,534	0.77	4,463	0.12
Newton	36,827	290,809	7.90	173,416	4.71	64,763	1.76	52,630	1.43	42,622	1.16
Fitchburg	33,021	149,455	4.53	83,715	2.54	39,708	1.20	26,032	0.79	10,287	0.31
Taunton	30,967	144,372	4.66	83,906	2.71	41,758	1.35	18,708	0.60	21,880	0.71
Total, 19 cities	1,735,192	$10,167,269	$5.86	$6,143,377	$3.54	$2,480,532	$1.43	$1,543,360	$0.89	$2,041,072	$1.18

* Enumerated in 1905.

* Enumerated in 1905.

B. Cities of Pennsylvania with * Population of 30,000 or More.

Name of City.	Population.	Cost of Operation and Maintenance.								Payments for Outlays.	
		Aggregate.		Payments for Expenses.				Interest on Value of Buildings, Grounds, and Equipment.			
				Salaries of Teachers.		All Other.					
		Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.
Philadelphia	1,417,062	$5,421,738	$3.83	$3,358,551	$2.37	$1,539,541	$1.09	$523,646	$0.37	$1,137,077	$0.80
Pittsburg	364,161	1,702,606	4.68	937,418	2.57	525,188	1.44	240,000	0.66	601,217	1.65
Allegheny	142,848	681,758	4.77	347,588	2.43	188,142	1.32	146,028	1.02	238,755	1.67
Scranton	116,111	531,669	4.58	304,935	2.63	134,061	1.15	92,673	0.80	64,605	0.56
Reading	89,111	309,113	3.47	177,912	2.00	76,849	0.86	54,352	0.61	123,972	1.39
Erie	58,783	223,844	3.81	125,022	2.13	56,640	0.96	42,182	0.72	17,067	0.29
Wilkesbarre	58,721	196,949	3.35	119,905	2.04	51,455	0.88	25,589	0.44	8,950	0.15
Harrisburg	54,807	215,021	3.92	128,996	2.35	48,029	0.88	37,996	0.69	58,742	1.07
Lancaster	46,184	125,024	2.71	61,992	1.34	35,984	0.78	27,048	0.59	71,798	1.55
Altoona	45,557	180,758	3.97	99,509	2.18	45,729	1.00	35,520	0.78	162,888	3.58
Johnstown	42,160	178,751	4.24	98,759	2.34	53,392	1.27	26,600	0.63	4,700	0.11
McKeesport	42,024	179,399	4.27	101,350	2.41	45,994	1.09	32,055	0.76	65,515	1.56
Allentown	40,571	134,894	3.32	76,107	1.88	29,290	0.72	29,497	0.73	10,463	0.26
York	38,258	149,931	3.92	77,644	2.03	41,359	1.08	30,928	0.81	40,941	1.07
Chester	37,333	130,615	3.50	72,085	1.93	34,172	0.92	24,358	0.65	2,555	0.07
Newcastle	35,429	125,062	3.53	74,290	2.09	32,976	0.93	17,796	0.50	42,928	1.21
Total, 16 cities	2,629,120	$10,487,132	$3.99	$6,162,063	$2.34	$2,938,801	$1.12	$1,386,268	$0.53	$2,652,173	$1.01

* Estimated in 1905.

TABLE VII.—COMPARATIVE STATEMENT OF COST OF PUBLIC SCHOOLS, 1905.—*Continued.*

C. CITIES OF OHIO WITH * POPULATION OF 30,000 OR MORE.

Name of City.	Population.	Cost of Operation and Maintenance.								Payments for Outlays.	
		Aggregate.		Payments for Expenses.				Interest on Value of Buildings, Grounds, and Equipment.			
				Salaries of Teachers.		All Other.					
		Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.	Total.	Per Capita.
Cleveland	437,114	$2,172,872	$4.97	$1,316,067	$3.01	$605,501	$1.39	$251,304	$0.57	$348,259	$0.80
Cincinnati	343,337	1,338,908	3.90	902,854	2.63	233,992	0.68	202,062	0.59	86,477	0.25
Toledo	155,287	554,652	3.57	365,537	2.35	117,937	0.76	71,178	0.46	14,760	0.10
Columbus	142,105	638,504	4.49	382,167	2.69	130,476	0.92	125,861	0.89	78,093	0.55
Dayton	98,350	417,580	4.25	264,719	2.69	86,577	0.88	66,284	0.67	18,885	0.19
Youngstown	51,516	258,075	5.01	116,037	2.25	76,998	1.49	65,040	1.26	4,000	0.08
Akron	49,403	241,777	4.89	119,094	2.41	79,033	1.60	43,650	0.88	24,035	0.49
Springfield	41,433	174,059	4.20	103,852	2.51	26,967	0.65	43,240	1.04	11,512	0.28
Canton	37,907	148,717	3.92	89,136	2.35	35,601	0.94	23,980	0.63	—	—
Total, 9 cities	1,356,452	$5,945,144	$4.38	$3,659,463	$2.70	$1,393,082	$1.03	$892,599	$0.65	$586,021	$0.43

* Estimated.

The per capita averages for corporate expenses, police, highways, and schools for cities of Massachusetts are shown in Table V to be considerably greater than for the cities of Ohio, as set forth in Table VI.

So far as the data afforded by the Census Report go, the most accurate criterion available for determining the scale of salaries in force in cities with 30,000 or over of population is the per capita average payment for teachers' salaries. Accordingly, in Table VIII, the cities reported as paying the twenty highest per capita rates for teachers in the public schools are arranged in descending order. It is highly significant that, of the twenty-two cities included in the table, nine belong to the Western and ten to the North Atlantic group of cities; and that, of the ten North Atlantic cities, six cities besides Boston are situated in Massachusetts. The rank of the Western and Massachusetts cities, in respect to payments for corporate purposes and police department, as well as the average salaries of police employees, is also high. It seems to be fairly certain that the enhanced cost of city government in the States of Massachusetts, California, and Washington, is partly owing to the existences of a higher scale of salaries and wages in these States than obtain in most States.

Tables showing the salaries paid to certain officials—*e.g.*, mayors, members of the City Council, chiefs of police, and the superintendents of schools—would be a welcome addition to the census reports on the statistics of cities.

The figures showing the rank of cities according to their per capita average payments for corporate expenses or for selected objects of expenditure, all tell one and the same story, whether one scrutinizes the tables relating to the ten leading cities in Group 1 as in Tables III and IV, or cities grouped according to State lines, as in Tables V and VI, or cities grouped as in Table VIII, according to per capita payments for teachers' salaries. In each case it is evident that the figures showing rank as to payments do not correspond closely with the rank of the same cities in respect to population. It is noticeable, too, especially in the case of the cities of Ohio (which are organized

under a definite municipal code, and are required by law to keep their accounts and render their financial reports in accordance with a uniform system prescribed by the State Auditor), that there is a nearer approach to parallelism between the absolute figures showing payments and the population figures.

TABLE VIII.—COMPARATIVE STATISTICS OF CITIES HAVING HIGHEST PER CAPITA PAYMENTS FOR SALARIES OF TEACHERS.

Name of City.	Per Capita Payments.						Average Salaries of Police Employees.	Rank.	Rank in Population.
	Teachers' Salaries.	Rank.	Corporate Payments, Expenses.	Rank.	Police Department.	Rank.			
Pueblo, Col.	$5.14	1	$22.96	4	$1.63	8	$913	13	22
Newton, Mass.	4.71	2	40.83	1	1.92	5	1,036	8	19
Spokane, Wash.	4.56	3	21.41	7	1.13	18	1,027	9	16
Salt Lake City	4.51	4	19.36	10	1.19	16	997	11	14
Boston, Mass.	4.50	5	35.55	2	3.23	2	1,150	3	2
Oakland, Cal.	4.34	6	16.01	21	1.51	10	1,254	2	11
Butte, Mont.	4.27	7	16.95	19	2.23	4	1,105	5	17
Denver, Col.	4.25	8	21.57	16	1.40	12	930	12	5
Sacramento, Cal.	4.25	8	18.27	4	0.91	20	625	21	21
New York City	4.06	9	25.95	3	3.34	1	1,282	1	1
Seattle, Wash.	3.92	10	20.84	8	1.29	14	762	18	7
Springfield, Mass.	3.91	11	18.38	13	1.30	13	887	15	10
Kansas City, Mo.	3.78	12	18.06	15	1.86	6	817	17	4
Cambridge, Mass.	3.76	13	20.44	9	1.56	9	999	10	8
Washington, D.C.	3.70	14	22.61	5	3.09	3	1,049	7	3
Somerville, Mass.	3.68	15	16.61	20	1.15	17	1,089	6	12
Worcester, Mass.	3.58	16	16.97	18	1.27	15	899	14	6
Malden, Mass.	3.51	17	17.96	16	0.94	19	856	16	18
Yonkers, N.Y.	3.45	18	18.77	12	1.65	7	1,124	4	13
Tacoma, Wash.	3.43	19	19.05	11	0.90	21	684	19	15
Hartford, Conn.	3.35	20	17.38	17	1.48	11	616	22	9
Racine, Wis.	3.35	20	10.72	22	0.41	22	680	20	20

The following comparative statement for cities of 37,000 and 30,000 inhabitants also shows marked variations within each group, both in absolute and relative figures, as respects payments for the same objects, although the cities in each group differ but slightly from each other as to population. Among 154 cities, the largest group of cities having the same round number of inhabitants numbers eight. It includes all cities

COMPARATIVE STATEMENT OF CITIES OF 37,000 AND 30,000 INHABITANTS.

A. Absolute and Per Capita Figures.

Name of City with Rank in 154 Cities.	Corporate Payments.				Teachers' Salaries.			
	Expenses.	Rank.	Per Capita.	Rank.	Amount.	Rank.	Per Capita.	Rank.
122. Canton, Ohio . . .	$386,501	6	$10.20	6	$89,136	6	$2.35	6
123. Passaic, N.J. . . .	362,658	7	9.58	7	110,788	4	2.93	4
124. Haverhill, Mass. . .	605,672	2	16.01	3	114,990	3	3.04	3
125. Topeka, Kan. . . .	459,992	5	12.22	5	123,233	1	3.27	1
126. Salem, Mass . . .	571,465	4	15.19	4	95,922	5	2.55	5
127. Atlantic City, N.J. .	822,113	1	21.87	1	79,589	7	2.12	7
128. Chester, Pa. . . .	268,905	8	7.20	8	72,085	8	1.93	8
129. Chelsea, Mass. . .	602,988	3	16.17	2	115,605	2	3.10	2
Total	$4,080,294		$13.55		$801,348		$2.66	
Average	510,037				100,168			
149. Taunton, Mass. . .	$517,551	3	$16.71	3	$83,906	3	$2.71	3
150. Sacramento, Cal. . .	561,377	2	18.27	2	130,748	2	4.25	2
151. Oshkosh, Wis. . . .	308,623	5	10.09	5	79,546	4	2.60	4
152. Pueblo, Col. . . .	699,216	1	22.96	1	156,633	1	5.14	1
153. New Britain, Conn. .	309,003	4	10.24	4	48,169	5	1.60	5
Total	$2,395,770		$15.69		$499,002		$3.66	
Average	479,154				99,800			

B. Marked on Scale of 100 for Population, Per Capita Expenses, Etc.

Name of City with Rank in 154 Cities.	Population.		Corporate Payments.		Teachers' Salaries.[1]	
	Number.	Mark on Scale of 100.	Per Capita.	Mark on Scale of 100.	Per Capita.	Mark on Scale of 100.
122. Canton, Ohio . . .	37,907	101.66	$10.20	141.66	$2.35	121.80
123. Passaic, N.J. . . .	37,837	101.47	9.58	133.05	2.93	151.85
124. Haverhill, Mass. . .	37,830	101.45	16.01	220.23	3.04	188.60
125. Topeka, Kan. . . .	37,641	100.94	12.22	169.72	3.27	169.40
126. Salem, Mass. . . .	37,627	100.90	15.19	210.97	2.55	132.13
127. Atlantic City, N.J. .	37,593	100.81	21.87	303.75	2.12	109.84
128. Chester, Pa. . . .	37,333	100.12	**7.20**	**100.00**	**1.93**	**100.00**
129. Chelsea, Mass. . .	**37,289**	**100.00**	16.17	224.58	3.10	160.63
149. Taunton, Mass. . .	30,967	102.61	16.71	165.61	2.71	169.37
150. Sacramento, Cal. .	30,732	101.84	18.27	181.07	4.25	265.62
151. Oshkosh, Wis. . . .	30,575	101.31	**10.09**	**100.00**	2.60	162.50
152. Pueblo, Col. . . .	30,457	100.92	22.96	227.55	5.14	321.25
153. New Britain, Conn. .	**30,178**	**100.00**	10.24	101.49	**1.60**	**100.00**

with a population between 37,000 and 38,000. There are several groups of five cities, each having an equal number of inhabitants in round numbers; *e.g.*, those having 30,000 to 31,000, those with 38,000 to 39,000, those with 42,000 to 43,000, and those with 58,000 to 59,000. We have compiled the data only for the five cities with 30,000 to 31,000.

It seems tolerably clear from the tables presented in this article that the number of its inhabitants is not the controlling factor in respect to a city's rank as regards corporate payments for expenses or as regards payments for the leading objects of expenditure. It seems probable that an important factor in the marked variations we have considered may be found in the unequal purchasing power of money as regards services and materials in different sections of the country. But the most influential factors in producing the apparently inexplicable variations in the amounts of total and per capita payments of the several classes set forth by the Bureau of the Census in the "Statistics of Cities for 1905" are, doubtless, to be found in the diversity of organization and variety of administrative methods which, at present, characterizes the governments of American cities.

At any rate, that is the conclusion reached by the Bureau of the Census, and stated in the text which precedes the tables from which we have compiled the tables presented in this article. Thus, in the discussion of the purpose and scope of "Financial Statistics," we read on page 7 that "the statistics are affected both by the very great differences in the organization of American cities for local self-government and by the kind of accounts kept." And again, on page 79, in a passage already quoted, after noting "the great differences shown by different cities in the amounts of total and per capita payments and receipts of the several classes," it is stated that "the causes of many such variations were pointed out in a general way on page 21 of Census Bulletin 20, but no special investigation has been made for any particular city or group of cities given in this report. In the case of most of the cities the variations in per capita payments and receipts reflect differences in municipal organi-

zation or administration." To whom can we look but to the Bureau of the Census for a trustworthy description of those differences, and for a convincing demonstration of their influence upon the financial statistics in which "the Bureau of the Census seeks to present such data as will admit of ready comparison between the several cities"? It is the lack of such description and demonstration which now renders the "ready comparison" of cities, except in an intra-tabular way, so ticklish a matter for the man in the street and the man on the stump.

We venture to think that the value of the Census Tables would be enhanced and their usefulness become more evident alike to the plain citizen, the fiscal officer, and the student of statistics, if more and fuller analytical and interpretative studies were introduced into the text which precedes the tables.

The present report contains a number of features which render it more complete and useful than the report for 1902 and 1903 (Bulletin 20) or the report for 1904 (Bulletin 50). Certain new tables, particularly the "Comparative Summaries for 148 Cities, 1902 to 1905," have already been mentioned. Another new and instructive table is "Table 9. Payments for Outlays, Classified by Resources from which Paid, and by Departments, Offices, Accounts, and Industries." Other new features are: an index of ten pages; an Introduction, pages 7–44, devoted to an exhaustive discussion of the principles of Commercial and Governmental Accounting, which will repay careful study; "Table 36. Arrests of Children, Classified by Offense; Table 37. Juvenile Courts and Disposition of Juvenile Offenders; Table 38. Licensed Dealers in and Manufacturers and Bottlers of Intoxicating Liquors;" and an instructive special study by M. N. Baker, associate editor of the *Engineering News*, entitled "Sewerage and Sewage Disposal."

As it stands the series of reports issued by the Bureau of the Census for the years 1903–05 constitutes an invaluable and unique source of information on the statistics of cities.

REVIEWS.

School Reports and School Efficiency. By Professor David S. Snedden and Dr. William H. Allen. Published by the Macmillan Company.

This compact volume is a book with a definite practical purpose. The study, which was made for the New York Committee on Physical Welfare of School Children, points the way for such an organization of educational statistics as shall give adequate publicity to school facts and promote efficiency in school administration. The authors have done their work with commendable thoroughness, discrimination, and judgement. Their book is a mine of useful information, criticism, and suggestion for school administrators, teachers, and citizens. It can hardly fail to accomplish substantial results in stimulating interest, discussion, and reform in the field of public education.

The need of reform in the methods of collecting and presenting educational statistics will not be questioned by any one having even slight acquaintance with school reports. At present the bulk of educational statistics cannot be said to serve any useful purpose whatever. Much of this statistical output represents waste of money, effort, and printer's ink. A deal of dead matter is published year after year, the original reason for its publication having long ceased to exist. Hence school reports contain many tables which are not consulted by any one. Moreover, matter that would otherwise be useful is frequently presented in such form as to be largely unintelligible. The figures are not accompanied by the analysis and interpretation required to bring out their meaning. These dark forests of figures repel unprofessional explorers. Laymen need expert guidance in order to find their way through the statistical woods. This the school reports fail in most cases to give. It is not surprising, therefore, that the ordinary citizen pays no attention whatever to educational statistics.

The shortcomings of school reports are particularly conspicuous in reference to the new educational experiments which are being tried on every hand. In recent years the schools have undertaken a wide variety of new activities. Such are the evening and vacation schools, school playgrounds and gardens, medical inspection, educational centres, and the like. In this social expansion of the school system the intelligent cooperation of the public is of the greatest importance. It is essential to the proper direction of these educational ventures that the comparative

costs and results of the various undertakings be definitely known. The tax-payers have a right to know what these experiments are severally costing and whether the results are commensurate with the expenditures. It is possible that the schools are doing too many things that benefit only a few persons, and that they might better confine their activities to a few things that would benefit many persons. The needed information ought to be supplied by the school reports.

The fact-study by Professor Snedden and Dr. Allen shows how educational statistics may be organized to meet the end just indicated. These experts discovered no single report that would serve as a working model. They found some excellent features in many of the hundred or more reports which they examined, but they declare that "even the best of the reports, however, leave many questions unanswered, and few of them have undertaken to apply modern or scientific statistical methods. Apart from the few best reports it must be said that the majority of the reports fail conspicuously to provide statistical information either to the layman or to the administrator. They illustrate a striking phase of inefficiency in American municipal administration." The authors of the book rightly maintain that the published school report should be regarded essentially and primarily as a communication from the school authorities to the public, and should be planned in such a way as to inform and interest the public with a view to securing support for progressive methods of school administration. By exhibiting the best methods in use they supply the material which school authorities can utilize in devising a form of report adapted in each case to meet local needs as regards publicity and efficiency.

The eight chapters of the book treat of the following topics: The purposes of educational statistics, the beginning of school reports in American cities, efforts of the National Educational Association to improve school reports and to secure uniformity, examples of tables and other forms of presenting school facts used in typical city school reports, important questions not answered by existing reports, suggested economies and improvements for school reports, a practical study of one school report, New York City.

The most suggestive chapter is that enumerating the questions not answered by existing reports. This list brings into striking relief the failure of educational statistics to measure up to the requirements of publicity and efficiency. Most reports furnish little or no statistical data regarding the working of the newer educational experiments. For example, among the questions relating to medical inspection, vacation schools, and playgrounds never answered are these: What is the cost of medical inspection, and what for each unit of work? What proportion of children need medical care? What proportion of children backward in studies or over-age owe this condition to physical defect? What

is the effect upon school progress of removing physical defects? How many physicians and how many nurses are needed to do thoroughly for all children in all schools what is being done for a few children in a few schools? How much would their work cost? How much would they save? What is the character of attendance at vacation schools, distributed as to duration or persistency, classes of children, kinds of work taken, etc.? What are the results of such attendance? How many more vacation schools are needed? What would it cost to give all children in the city the privileges now confined to a few?

It is obviously not necessary or desirable that full statistical information on the preceding questions and the many others suggested in the book be incorporated in each annual report. Such information should be gathered regularly, but need not be published annually. In this connection three broad principles of economy are laid down by the authors for the guidance of officials in preparing reports. The first is that only such data shall be collected and such reports prepared as will tend to answer questions bearing on educational efficiency and serve the purposes of school administration either directly or through the indirect means of publicity. The observance of this principle would eliminate useless data that now lumber up the reports. Another principle is that the primary data of the reports—the facts furnished by teachers and other workers—should be collected and treated by the most approved methods and devices of statistical science. Many of the forms now used by teachers in making original records are cumbersome and wasteful of time. The third principle calls for discrimination in regard to the publication of statistical tables in school reports. Annual publication is not called for in all cases. For some types of information biennial, triennial, or even less frequent publication would suffice. The frequency of publication should be determined by the nature of the statistics and the object of presentation.

These suggestions and the others embodied in the book merit the attention of school authorities everywhere. At present school reports are as uninviting and unrewarding to explore as the scriptural valley of dry bones. The constructive criticism of Professor Snedden and Dr. Allen indicates ways and means by which the dry bones may be vitalized. These critics show how educational statistics may be transformed from a forgotten factor in the school system to an effective agency of educational progress. It is a timely service thus to apply to problems of school administration the new principles of statistical recording and reporting which are being employed to secure publicity and efficiency in many branches of the public service.

F. SPENCER BALDWIN.

Mortality Statistics, 1906. *Report of the Bureau of the Census, Washington, D.C.*, 1908.

This is the seventh annual report and the third separate volume issued by the Bureau of the Census under the title of "Mortality Statistics." The first five annual reports were included in one volume, published in 1906; the statistics for 1905 constituted the second volume, which was published in 1907; and the present report for 1906 was available for distribution in the early part of the current year. The mortality report for 1905 contained about 360 pages, and the 1906 report has expanded to 480 pages, including about 20 pages of introduction, 50 pages of textual analysis, and 30 pages of appendices. The 1906 report, therefore, contains more pages of solid tabular matter (380) than were included in the whole report for 1905. If, as the Director of the Census hopes, this mortality volume is ultimately to be issued within six months of the close of the calendar year for which the statistics are compiled, the problem to be solved is how to exclude the data of least importance and include those of greatest importance. The report must not be so big and complex that it cannot be prepared in a reasonable space of time, nor should valuable tables and data be sacrificed for the sake of early issue. It seems to the writer that the present bulk of the report could be materially reduced without the sacrifice of valuable data, while much information of great importance, not yet obtainable in the volume, ought ultimately to find a place there. For example, if the Summary and Rate,—Table IV, were limited to rates for the last year and the average rates for the previous five years, or a standard five years, a table which now occupies 102 pages would be reduced at least one-half, and at the same time it would perhaps serve a more useful purpose. On the other hand, certain fundamental information ought to be added.

A more convenient abstract of the summary results of mortality for the year should be given a prominent place in the first part of the volume. This table should give the population dealt with and the deaths in the aggregate and in their main constituent parts, or divisions, by color, nativity, etc., with the corresponding death-rates. In the present volume, for example, the reader must look on page 21 to find that 41,508 negro deaths were considered in 1906, while the corresponding estimated negro population is not given, although the negro population *in 1900* for the *registration States*, as constituted in 1906, is found on page 10. This figure, however, does not include the negro population of *registration cities* in non-registration States.

Mr. Hoffman has suggested a table which would give the mortality record, at least for the registration area as a whole, by single years of life, with distinction of sex, color, and general nativity.*

* See "Practical Suggestions for Improving Vital Statistics," by Frederick L. Hoffman, December, 1907, number of these publications, p. 424.

It is to be hoped, also, that the Bureau of the Census can soon see its way clear to tabulate the Indian, Japanese, and Chinese mortality by causes of death, with distinction of sex and age, precisely as the mortality for the whole registration area is now tabulated in General Table 6, pages 354–361. Such tables would require only eight pages for each race, and they would yield data of great value. Ultimately, some at least of the principal nativities should be tabulated in the same manner,—notably the Irish, Germans, Italians, Hungarians, French Canadians, Scandinavians, etc. The mortality data would be of considerable value without reference to population, and, with the publication of the population statistics as determined by the next census, the death returns by race and nativity, with distinction of sex, age, and causes of death, would be of immeasurable value for a large variety of purposes,—legislative, sociological, and other.

It is gratifying to be able to record progress both in the form and in the substance of the mortality statistics of 1906 as compared with the two previous volumes. The registration area for 1906 embraced 48.8 per cent. of the total population of the continental United States, as compared with 40.9 per cent. in 1905. The States of California, Colorado, Maryland, Pennsylvania, and South Dakota, were added in 1906. The estimated addition in population was 6,698,190, of which 598,273 was urban, and 6,099,917 rural. The number of deaths in the registration area in 1906 was 658,105, of which 358,286 were males and 299,819 females; by nativity, 441,096 were natives and 162,364 were foreign born, the nativity of 10,609 being reported unknown; and, by color, 614,869 were white, 41,508 negroes, 1,118 Indians, 917 Chinese, 478 Japanese, 5 Hawaiians, 3 Koreans, 3 Filipinos, 2 East Indians, 1 Tahitian, and 1 Hindoo.

The annual death-rate in the registration area as a whole in 1906 was 16.1 per 1,000 of population; in the registration cities it was 17.2; and, in the rural area, 14.1. In 39 specified cities in which the colored element (mostly negroes) numbered 10 per cent. or more of the total population according to the census of 1900, the aggregate white death-rate in 1906 was 17.2 per 1,000 of population, and for the five years 1900–05 it was, on the average, 17.5. The death-rate of the colored element in 1906 in the 39 cities combined was 28.1, and averaged 28.4 for the previous five years. The colored death-rate was about 60 per cent. in excess of the white death-rate both in 1906 and, on the average, during 1901–05.

The comparative death-rates of the white and colored elements of the population of the specified localities by principal causes of death are available in Summary and Rate Table IV, pages 88–157. Convenient comparisons are also made in the textual analysis. The statistics show that the colored death-rates are in excess of the white from typhoid fever, malarial fever, whooping-cough, consumption, respiratory diseases, nervous diseases, circulatory diseases, digestive diseases, and urinary diseases. On the other hand, the colored element (mostly negroes) is some-

what less liable to death from scarlet fever, diphtheria and croup, cancer, and suicide. An excellent comparative summary of the white and negro mortality in the aggregate and by causes of death has been made by Mr. F. L. Hoffman in the *Spectator*, an insurance weekly published in New York. The summary was based upon the "Mortality Statistics, 1906," and may be found in the *Spectator* of May 21, 1908.

General Tables 1, 2, and 3 have been very materially improved for practical purposes in "Mortality Statistics, 1906." In the previous annual reports the registration cities in these tables were arranged in alphabetical order without reference to State grouping. In the present report the cities are arranged alphabetically under the States, which are also in alphabetical order. Now, if the student or reader wants to make comparison of the mortality in contiguous cities or groups of cities, this can be done much more readily than heretofore. This same admirable arrangement of the registration cities has been adopted also in the Summary and Rate Tables I, II, and IV.

Another improvement to be noted in the quality of the contents of the "Mortality Statistics of 1906" is the separation of the Chinese and Japanese mortality in the General Table 4, pages 320–324. The mortality for these races is now available, with distinction of sex and age, for the main divisions of the registration area.

These annual reports of mortality are of the greatest possible value to statisticians, sanitarians, legislators, workers in the various fields of sociological research, and to all persons in the least interested in vital statistics. Any suggestions for improvement that will make the volumes of greater value or more readily workable will, undoubtedly, receive serious consideration and be adopted, if deemed practical, at the earliest possible moment; for Dr. Cressy L. Wilbur, the chief statistician of the Division of Vital Statistics, is deeply interested in bringing these reports to a high degree of accuracy and completeness. Those who make daily use of the volumes can best appreciate their present value, and are, perhaps, most anxious for their quick improvement in some particulars. The few suggestions here set forth are made in a spirit of helpfulness and not in a spirit of captious criticism.

F. S. Crum.

Prisoners and Juvenile Delinquents in Institutions, 1904. *Special Report, Bureau of the Census, Washington, D.C.*, 1907.

The investigation upon which this report is based was planned by Dr. Roland P. Falkner, but the treatment of the statistical material collected and the analysis of the results was the work of Mr. John Koren. In a cursory review of a comprehensive report of this character it is impossible

to do more than briefly allude to a few of the many things contained therein which must prove to be of special value to students of criminology and to practical workers in penal institutions. The report embraces nearly 300 pages, and it is filled with interesting facts from cover to cover. It charts in an admirably clear and concise manner the geographical distribution of adult criminals and juvenile delinquents in the penal and reformatory institutions of the United States.

Distinction is made of sex, color, nativity, age, crime or offence for which committed, kind of sentence imposed, length of term of commitment, previous occupation, literacy, conjugal condition, etc. The tabulation of these various series of facts has been done so well that no criticism of the form of the tables or their heading, would appear to be necessary or desirable.

Every superintendent, warden, principal keeper, or other person responsible for the care and keeping of prisoners, should be interested in this report. It should also prove of exceptional value to those whose business it is to prepare the annual or biennial reports of jails, penitentiaries, prisons, and reformatories. This report in many particulars of classification and tabulation of facts should furnish compilers of institutional reports valuable clues for the improvement of their own methods of presenting the facts in the experience of their institutions.

This report on prisoners and juvenile delinquents not only presents the facts revealed by a census enumeration of these special classes of the population, but it does much more, and for the first time a serious effort is made to measure the force of the current of crime in the United States, so far as this is possible by a statistical study of the movement of the prison population through a period of one year. It is one thing to compare census enumerations of prisoners, separated by a period of ten years, but it is quite another and, perhaps, more important thing to learn how the prison population changes in the course of a given year. This report, it seems to me, shows very clearly that a study of commitments and discharges of prisoners is more valuable than a mere enumeration of prisoners on a given date; for we see the prison population in its dynamic aspect, which is certainly quite as important as its static aspect.

No one at all interested in criminology can afford to do without this report. The layman as well as the special student can readily find the facts wanted, for the volume is made easily workable by a comprehensive index of nine pages. As the report can be obtained for the asking, it does not seem necessary or desirable to present here even a partial list of the more important detailed facts contained therein. These can best be understood if studied in correlation with each other, and no reviewer could hope to present them in this manner any better than has been done in the tables and textual analysis of the report itself. F. S. C.

Annuario de Estatistica Demographo-Sanitaria, Rio de Janeiro, Brazil. By Dr. Sampaio Vianna. (For the year 1906, and published in 1907.)

This annual volume, like its predecessors, is a goodly-sized document of some three hundred pages, which sets forth the essential facts relating to the vital statistics of Rio de Janeiro with some summary tables for certain other of the more important cities of Brazil. These annual reports should be of special interest to students of vital statistics, as they contain facts pertaining to a large population located in the tropics and to a city which, in the immediate past, has had a bad reputation because of its high mortality from yellow fever and other diseases more or less peculiar to tropical climates.

A summary of the meteorological data for 1906 forms the first page of the report proper, and the second page contains a summary statement of the exact location, altitude, area, and geographical divisions of the federal district or greater city of Rio de Janeiro. This method might well be adopted by our own larger American cities, some of which do not clearly define in their health or other reports the exact limits to which the reports refer or give the areas of the subdivisions of the city, such as wards, assembly districts, etc.

The movement of the population of Rio de Janeiro is briefly discussed, and the more important facts relating to immigration and emigration are clearly set forth with distinction of nativity and whether the migratory movement was by railroad or by water. Some of these facts are illustrated by a graphic display, opposite page 15, by means of rings within rings and rings interlinked. This kind of graphics does not appeal to the writer as being the best suited to represent a sober fact or series of facts more clearly than figures can do. There are other offences of the same kind in the volume, and perhaps the most notorious are those given opposite page 59, where the comparative mortality rates of Rio de Janeiro and other important cities of the world are represented by mountain peaks. Artistic imagination, it seems to the writer, is out of place, when used in this way. The diagram opposite page 18 is not quite so bad as the others referred to, but the comparative statement of the marriages, births, and deaths could have been somewhat more clearly shown either by parallel vertical bars of even width and different colors or by the simple curves so familiar to students of statistics. A new form of diagram, unless distinctly better than an old one, should be avoided. A fine bit of color or an elaborate display of form in the figure often interferes with the essential function of the diagram. Emphasis is placed upon this important matter because such efforts are altogether too frequent in statistical reports, and graphics are too important an aid to statistics to warrant their prostitution by imaginative compilers of statistics. There are some very fine examples of diagrams and cartograms in the

volume here under discussion, notably the diagrams opposite page 66, which illustrate the comparative daily mortality from yellow fever in six different years, and the cartograms showing the distribution of cases of yellow fever, smallpox, pest, and diphtheria in Rio de Janeiro during the year 1906.

It would be impossible in a brief space to even allude to all of the interesting facts contained in this report. Among others, however, the following are of quite exceptional interest and importance. One chapter of six pages is devoted to a brief discussion of the still-births in Rio de Janeiro with some international comparisons. The proportion of the still-born to total births is quite high in Rio de Janeiro, or 70.2 still-births to every 1,000 total, against 28.5 for Budapest and 31.2 for Moscow. On the other hand, in Tokio the proportion in 1901 was 78.8, and in Paris in 1905, 84.1.

The general death-rate in the city of Rio de Janeiro during 1906 was 22.31 per 1,000 of population; in the suburbs it was 15.46; and in the federal district as a whole, 20.74. As recently as 1904 the general death-rate of the federal district was 28.66. The infant mortality (ages under one) in Rio de Janeiro seems to compare favorably with that of other large cities. The mortality by age and nativity can be worked out in detail from the tables presented in the report.

Of the causes of death the most important, locally, has always been yellow fever until as recently as 1902, when scientific efforts were first made to eradicate that scourge and with almost immediate good effects. Working on the mosquito theory, the present efficient local Board of Health has succeeded in almost clearing the city of yellow fever. In 1906, for example, there were but 42 deaths from that cause in the city of Rio de Janeiro, although the average annual number of deaths from that disease during the twenty-six years previous to 1903 was over 1,300.* The fight against smallpox is also showing good results, and there were only 9 deaths from that cause in 1906 against 3,566 in 1904, 1,414 in 1901, and 1,395 in 1899. These good results, judging from the weekly reports of the United States Marine Hospital Service, have continued during 1907.

It will be interesting to note whether the present progress in sanitation will be sustained in Rio de Janeiro. This will, of course, be necessary if the present conditions are to improve; and continued active efforts and great vigilance will be required to keep the city free from yellow fever and other contagious diseases. Malarial fevers also are still altogether too common, and progress in other sanitary directions, particularly in improved drainage, should result in a material reduction in the mortality from this class of fevers. The pest, or plague, and smallpox,

* For a very useful summary of progress in sanitation in Rio de Janeiro, see Part I of the Weekly Public Health Reports of the United States Marine Hospital Service, 1907, pp. 363 *et seq.*

if combated by the most modern and scientific methods, should ultimately be practically eliminated from the local mortality.

Containing, as it does, a considerable number of American residents, and, as one of the most important ports of South America, in constant communication with the ports of the United States, the health and sanitary conditions in Rio de Janeiro are of especial interest to this country. It is a fact deserving of sincere congratulation, therefore, that the present outlook for an at least normally healthful city is so bright in the metropolis and commercial emporium of Brazil.

F. S. C.